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ABSTRACT

This document is a summation of four years of work at the Research and Development Center for Teacher Education in Austin, Texas. The basic aims of this center are to research the effect of teacher education on teaching behavior, to research the effect of such teaching behavior on relevant aspects of child learning, and to develop a teacher education system composed of many small instructional modules. Included in this report are descriptions of various projects and activities in areas such as data processing, learning technology (consulting), mathematics and science modules building, and decision-making in preservice teachers' choice of teaching strategies. The programs, which are both personalized and individualized, emphasize a) feedback to prospective teachers; b) earlier, active involvement of teacher candidates, and c) experience for teachers in designing appropriate subject-matter content. The major developmental products of this basic research and experimentation are a diversified, comprehensive teacher education system and instructional guides to assist teacher educators. This report concludes that the center's close relationship with pre- and in-service teachers as well as public schools will ensure that instructional approaches will be responsive to the expanding role of the school in meeting the needs of the students. (PD)

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1969 Annual Report of Research and Development in Teacher Edu tion

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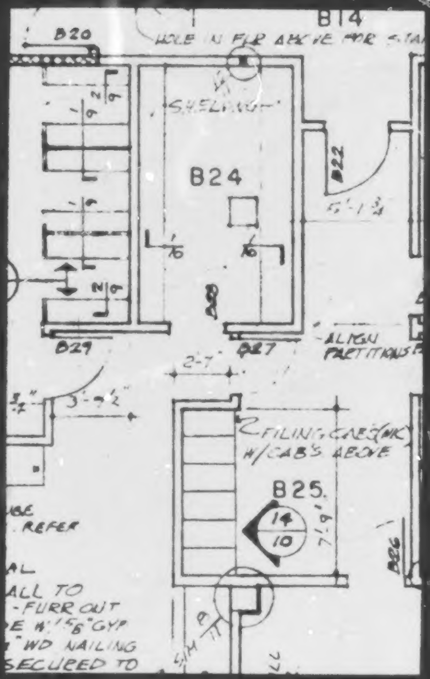
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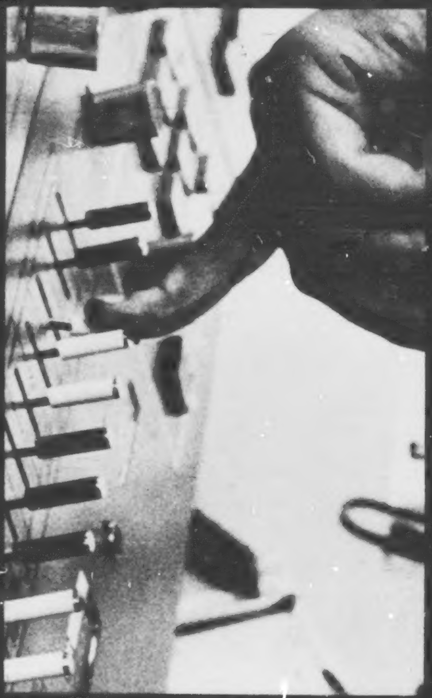

Annual Report of Research and Development Center

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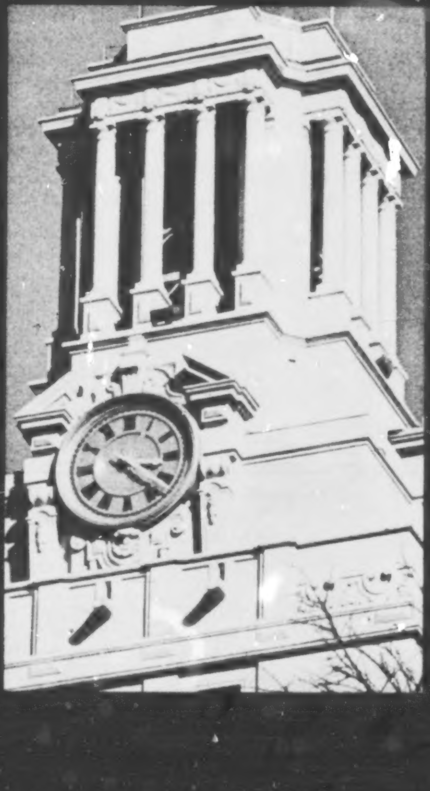


PREFACE

Printed upon the pages that follow is a summation of some four years of planning and building, testing and confirming, groping and finding. Herein we once again pay homage to the R & D Centers' mission and recount the realities of our encounter with the complexity of the task.

Four years in the life of an R & D Center is but a single footprint, for us a first footprint, on the meandering road to meaningful change in education. To reach that goal will require many more footprints, many more trials and a great deal more support and cooperative effort from those whom we seek to serve. To reach that audience, through its representatives in government and the educational community, we have prepared this special Annual Report. In it we have attempted to present, as clearly and as graphically as we are able, the concepts, organizational structure, programs, products and ideals that comprise the Research and Development Center for Teacher Education.

USOE DEPARTMENT OF EDUCATIONAL LABORATORIES ACTIVITIES AND PROGRAMS

This Center is one of a system of nine Educational Research and Development Centers funded under the Cooperative Research Act (as amended by Title IV of the Elementary and Secondary Education Act of 1965). The program was organized as one response to an increased national awareness of the importance of finding solutions to critical educational problems.

More specifically, the R & D Centers' program was devised to fill a unique role in relation to other forms of educational research and development, by providing a prime avenue for (a) bringing together a critical mass of interdisciplinary talent and other research resources from the behavioral sciences and other disciplines, (b) focusing on a crucial educational problem area by means of a long-range coordinated attack on large-scale problems, and (c) moving promising innovations through development toward an impact on actual educational practice. Although R & D Centers generally do not carry the innovative process through to final implementation themselves, they are charged with the responsibility for projecting a further route toward that goal by enlisting the interest of a regional educational laboratory, commercial developer, State or local agency, coordinating body, or other appropriate institution.

Although these centers have had an existence of only three to five years in which to build up their program, they have already recorded some significant steps toward the achievement hoped for, and this Annual Report describes some of the accomplishments of one of these centers. The list of all nine R & D Centers is as follows:

Learning Research and Development Center,
University of Pittsburgh (1964)

Center for the Advanced Study of Educational Administratio
University of Oregon (1964)

Wisconsin Research and Development Center for Cognitive Learning, The University of Wisconsin (1964)

Research and Development Center in Educational Stimulation,
University of Georgia (1965)

Research and Development Center for Teacher Education,
The University of Texas at Austin (1965)

Stanford Center for Research and Development in Teaching,
Stanford University (1965)

Center for Research and Development in Higher Education,
University of California at Berkeley (1965)

Center for the Study of Evaluation,
University of California at Los Angeles (1966)

Center for the Study of Social Organization of Schools,
The Johns Hopkins University (1966)

Also funded through this same program is the National Laboratory on Early Childhood Education, which consists of a group of six university-based centers coordinating their research and development efforts through a National Coordination Center at the University of Illinois.

The Educational Research and Development Centers are part of a larger set of institutions which contribute in specialized ways to the improvement of educational practice. These include:

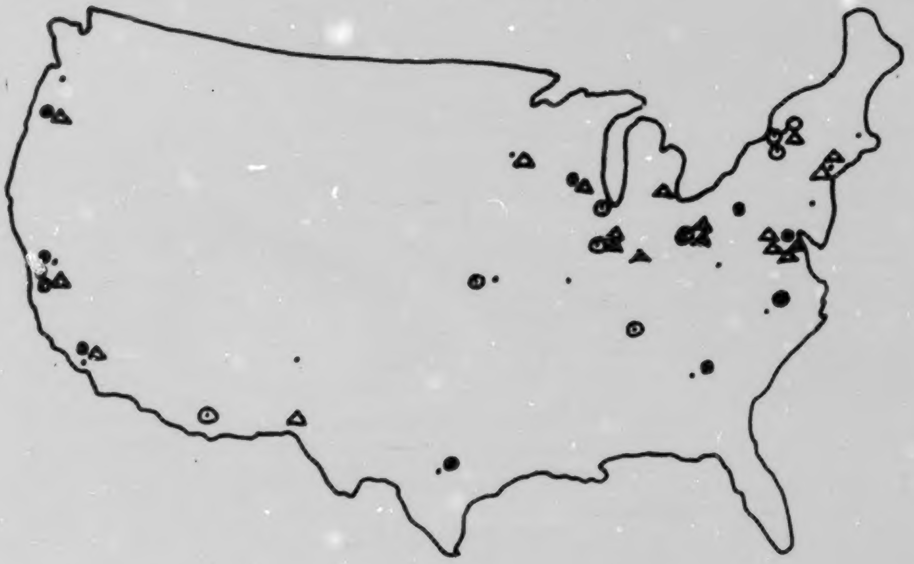
The two Educational Policy Research Centers, charged with providing a continuing examination of future educational needs and resources for the years 1980-2000.

The two Vocational Education Research Centers, established under the provision of the Vocation Education Act of 1963.

The system of 15 Regional Educational Laboratories, each of which concentrates on specific problems concerned with the development, demonstration, and dissemination of educational alternatives, materials, and practices for the schools; some of these have close relationships with the Educational Research and Development Centers.

The Educational Resources Information Center (ERIC), a nationwide network for acquiring, selecting, abstracting, indexing, storing, retrieving, and disseminating information about educational research and resources, including 19 ERIC Clearinghouses each providing coverage of a particular educational area.

DEL ACTIVITIES MAP



KEY

- ● Educational Research and Development Centers
- ⊙ National Laboratory on Early Childhood Education (six centers plus the National Coordination Center)
- ○ Educational Policy Research Centers
- ⊗ Vocational Education Research Centers
- • Regional Educational Laboratories
- △ ERIC Clearinghouses

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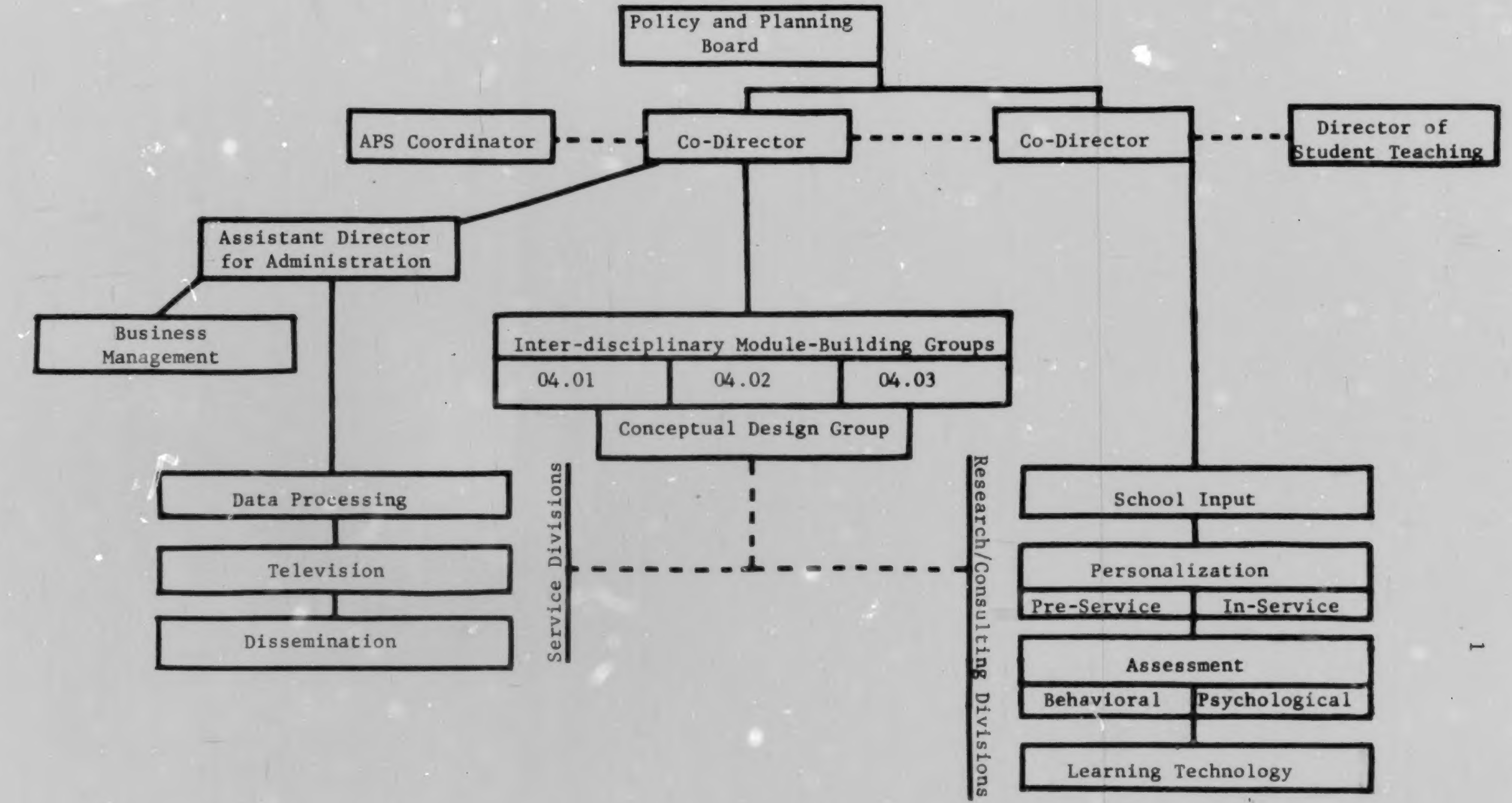
THE CENTER: AN OVERVIEW

ORGANIZATIONAL CHART

Research and Development Center for Teacher Education


Policy and Planning Board
APS Coordinator
Co-Director
Co-Director
Director of Student Teaching
Assistant Director for Administration
Business Management
Inter-disciplinary Module-Building Groups
04.01
04.02
04.03
Conceptual Design Group
Data Processing
Television
Dissemination
Service Divisions
Research/Consulting Divisions
School Input
Personalization
Pre-Service
In-Service
Assessment
Behavioral
Psychological
Learning Technology

PROGRAM AND PROJECT REGISTER

Code Number	Title	Coordinator(s) Investigator(s)
01.	Administration Division	Oliver H. Bown Robert F. Peck
02.	Service Divisions	Hilton R. Pankratz
.01	Data Processing	John R. Sheffield
.02	Television	Bill H. Burns
.03	Dissemination	David A. Wilson
03.	Research and Consulting Divisions	Robert F. Peck
.01	School Input (Consulting)	Marshel Ashley
.02	Personalization (Consulting)	Frances F. Fuller
.0201	Measuring Teacher's Personal Gain	Frances F. Fuller
.0202	Analyzing Teacher's Personal Gain	Frances F. Fuller
.0203	Individualized Teaching for Effective Coping	Thomas Good Jere E. Brophy
.03	Assessment (Consulting)	Donald J. Veldman
	Assessment Behavioral (Consulting)	Edmund T. Emmer
	Assessment Psychological (Consulting)	Shirley L. Menaker
.0301	Teacher Aides in a Secondary School	Donald J. Veldman
.0302	Normative Analysis of College of Education Assessment Data	Donald J. Veldman
.04	Learning Technology (Consulting)	Michal C. Clark Mary Lou Koran
04.	Inter-Disciplinary Module Building Groups	Oliver H. Bown
.01	Laboratory Experiences -- Module Building	
.0101	Teaching Laboratory Module Building	O.L. Davis, Jr.
.0102	Organizational Constraints on Teacher Behavior	Michael P. Thomas, Jr.
.0103	A Longitudinal Study of the Development of Teaching Skills in a Teaching Laboratory	Edmund T. Emmer Gregg B. Millett
.0104	Thinking/Communication Skills; Increasing Prospective Teacher Power	Sara W. Lundsteen
.02	Curriculum Based Instructional Approaches	
.0201	Science -- Module Building	David P. Butts Gene Hall

Code Number	Title	Coordinator(s) Investigator(s)
04. (cont.)		
.0202	Mathematics -- Module Building	E. Glenadine Gibb
.0203	Language Arts -- Module Building	L. Jean York
.0204	Social Studies -- Module Building	Clyde I. Martin
.0205	English as a Second Language -- Module Building	Marshel Ashley Pedro I. Cohen
.03	Personalization -- Module Building	
.0301	Concerns of Teachers	Frances F. Fuller
.0302	Psychological Assessment and Counseling of Teachers	Shirley L. Menaker
.0303	Using Video Films to Council Teachers	Frances F. Fuller
.0304	Motivating Strategies	Edmund T. Emmer
05.	Team Teaching	Ira Iscoe June M. Gallessich

THE CENTER: A DESCRIPTION

O.H. Bown

The Research and Development Center for Teacher Education was established at The University of Texas at Austin in September, 1965, on an existing foundation of previous work in the field of teacher education. In addition to the individual and departmental undertakings in both instruction and research on the part of a large and diversified teacher education faculty, several relatively large research and demonstration projects had been conducted within the teacher education target area in the decade preceding the establishment of the Center. Several of these projects had a "programmatic flavor" in the sense that they typically involved teams of faculty members and associates with differing orientations, backgrounds and areas of expertise working toward greater understanding of, and more effective intervention in, the complex processes through which a person moves in becoming a teacher. Most of this work was conducted in reality settings with cross sections of prospective and inservice teacher populations rather than in laboratory settings with highly selected or isolated groups. To this extent, the Center began with established groups of faculty and support personnel that had been seasoned to different degrees in rudimentary approaches to systematic, programmatic operation in various segments of the teacher education domain.

Once "born" as an R & D Center we were confronted with broader responsibilities in our target area, responsibilities that could only be met by more clearly focused and integrated efforts. Our initial strategy was to pull together the most promising programs and faculty-staff teams which had developed in the "prenatal" period. In retrospect, this actually amounted to a gathering of highly diverse, segmented efforts from different points on the research-development continuum. These represented projects at different stages of evolution, directed toward different target populations, and with a variety of objectives and goals, all placed under a very broad umbrella labelled "teacher education."

Virtually everything that happens in the field of education has implications for the way in which teachers should be educated, but one of the major developmental themes that has occurred throughout most of our infancy as a programmatic institution has been the continuing sharpening and focusing of our program. This has involved difficult and sometimes unpopular definitions and decisions, but this has been the necessary alternative to the effort to be "all things to all men" in our problem area. The relatively high degree of stability in our program and its implementing organization over the past year provides some confidence that this developmental hurdle has been largely cleared.

In this same general area of our evolution as an institution, the development of the regional laboratory program has concurrently produced clarification of another dimension of our focus of responsibility. We refer here to the research-development-dissemination-installation continuum, across the whole of which we proposed to scatter our Center during the early stages of its existence. We continue to feel that educational R & D, at a national level particularly, must be concerned with full implementation of all segments of this continuum. However, the distinctive role of the R & D Center has been increasingly differentiated. We now delimit our responsibility to the increase of the knowledge base on which new educational programs and products are built and the development of prototype programs through the pilot testing stage. The pilot testing, in turn, provides data which may verify or challenge the knowledge base and provides significant guidance for needed additions to that base. This clarification has been most important in enabling us to contribute our thrust in that area where university-based research and development is best equipped to make its contribution. We are pleased with our current efforts, both locally and nationally, to establish, in actuality, appropriate cooperation and functional collaboration between Centers and Laboratories, a condition that is logically desirable and necessary if our collective responsibilities are to be discharged. This collaboration with the Laboratories and a host of other institutions and agencies is clearly in its beginning stages. In large part, Centers and Laboratories, as well as other relatively young components of the educational R & D enterprise, have needed time to become established, to develop internally and to begin producing the components for which each is responsible before they could begin to be placed together into even a rudimentary system. The clarification of roles and differential responsibilities is enabling us to move with much greater dispatch into the collaborative stage.

Paralleling the evolution of the national network, our institutional mission has been delineated, clarified and increasingly focused through our own development. Our substantive programs have evolved from relatively separate projects attacking various relevant but isolated problems or challenges in the domain of teacher education to a rather highly concentrated and unified effort. This is easy to say and very hard to do, simple to assert and difficult to demonstrate on brief exposure to our somewhat complex array of organizational sub-divisions and functions. Teacher education is not a simple process. Our success in this regard must be judged from the more detailed reports on our substantive programs which follow, rather than on statements at a high level of abstraction, as in the present overview.

Here we would call attention to several facts or activities which we have regarded as evidences of progress in achieving a significantly increased degree of integration in our substantive program.

During the past four years, we have gone through a number of changes in direction, shifts in priorities, the phasing in and out of programs and projects, administrative and organizational realignments and reorganizations and the making and dissolution of faculty appointments to the Center. We suspect that our experience in this regard is very similar to that of other Centers, and perhaps many new institutions, and that as chaotic and difficult as it sometimes appears at a given moment from the inside, the ferment represents, at least in part, a healthy and inevitable process in the coming of age of an institution. This past year we cannot claim to have been problem-free, but there has been a noticeable leveling off of these more drastic vibrations or growing pains. In the Annual Report submitted April 1, 1968, (repeated in the Program Plan of October 30, 1968) the following resume of the Center's focus was submitted:

> The program of the R & D Center for Teacher Education has two major aims:
>
> 1. Basic research on the effects of varied kinds of teacher education on actual teaching behavior; and research on the subsequent effect of such teaching behavior on relevant aspects of child learning.
>
> 2. The development of a teacher education system composed of a diversified array of many relatively small instructional modules. Put together in differing combinations, such modules can be used in a flexible, often individualized manner for many kinds of teacher education. When any one module is ready for experimental testing, it can be tried out in many collaborating institutions, at both the preservice and inservice level.

This statement of focus is still regarded as a satisfactory description of our mission today, 16 months later. One might not be surprised that we could hold to this general, non-specific statement, but this is the first time in our short history that we have been able to make such a statement about even a six-to-twelve month period. More important, the organization that was evolved to implement this statement of purpose (elaborated in much greater detail, of course) and the specific responsibilities of sub-groups and individuals has also remained virtually constant through this period. Stability is not necessarily a sign that an institution is alive, creative or productive, but we regard it as an important achievement in our own development, since it has provided a base which has supported sustained effort toward a defined series of inter-linked, cohesive objectives.

The reorganization that occurred in April, 1968, was, in part, an effort to come to clearer terms with the emerging clarification nationally of the new R & D effort in education. We are particularly indebted to Dr. Francis Chase whose study of almost every Center and Laboratory in the country led to new perspective of both the mission of the new R & D institutions and the all-important functional relationship between research and development. He asserted, in effect, that sound development must be research guided and that research relevant to current major educational challenges must be development oriented or generating. This may seem very obvious today but two years ago research and development were seen as two separate countries, occupied by different populations and leaderships. The attempt to marry the two functions in this and other Centers was neither smooth nor fully consumated.

The reorganization recognized research and development as separable functions, at least at a given point in the evolution of an educational program. However, by adopting a reasonably standardized format for the design, construction and evaluation of all development products that had been generated in this Center from previous research and experimentation, scientific method was strongly injected into development efforts which might well have been guided by the "played-by-ear" impressionistic efforts that have characterized educational development in the past.

The decision to develop a comprehensive system of teacher education composed of definitive instructional modules was the vehicle for the eventual focusing and integration of previously diverse development efforts. An accompanying effect was the systematic application of the scientific method (through the disciplines of instructional design)throughout the development process. The implementation of this new focus brought about more active collaboration between members of the "mainly research" and "mainly development" camps than ever before. By aspiring to develop a single, comprehensive program, the necessity arose for increased dialog and collaboration between developers working on different segments of the teacher education process. We have a long way to go, but the experience of the last 16 months suggests that the goal is now much clearer, and the organization of personnel and resources is increasingly viable.

A related matter of some importance to the stability and productivity of this Center is the organizational structure mentioned briefly above. With only one mentionable exception, our organizational chart remains the same as the one presented in that Annual Report of April 1, 1968. The interdisciplinary task forces organized at that time to plan and monitor module development served their purpose well during the planning phase. Once this was completed, they continued to function for a time, but decreased in their usefulness as module-building sub-groups assumed responsibilities for the production and testing of the planned module series. Accordingly, the task forces were dissolved and the consultation assistance provided through them continued to be available to specific module-building groups by appropriate consulting divisions. Thus this change was structural rather than functional in any important sense. Again, the stability of the overt structure is regarded as significant only in the sense that it has permitted undisrupted movement toward our long-range production goals.

The evolved organizational structure is also valued because it has been largely successful in solving problems arising out of our being university-based, a situation which could become very disruptive. We refer specifically to the Policy and Planning Board, comprised of members of what we formerly called our National Advisory Committee and highly influential local members. This board is chaired by the Dean of the College of Education and includes, as local members, the chairmen of three major departments engaged in teacher education in the college, the Director of the Science Education Center, the State Commissioner of Education and the Assistant Superintendent of the Austin Independent School District. These individuals influence the professional destiny of all Center faculty (all of whom hold joint appointments in the departments) and control all college and school programs utilized in initial development and pilot testing of almost all Center programs and products. Their involvement at the policy-making level is most significant in giving them an effective voice and a real stake in the R & D effort. Faculty members live much more comfortably in a split appointment when leadership in each institution speaks with a common voice.

One of the most important activities of the past year has been the effort to develop a conceptual design for the comprehensive teacher education program that we are building. Clark's report, which follows this section, presents the design as it has evolved after many months of work on the part of many of our faculty. The design must be considered to be in preliminary form and will undoubtedly be modified many times in the months ahead. It does, in our judgment, represent a long step ahead in our efforts to make explicit the extremely complex array of understandings, attitudes, skills and competencies that our program aspires to build in teachers to be.

The necessity of formulating this conceptual framework (and of continuing to refine it) is perhaps best authenticated by the fact that it is one of the most difficult tasks we have undertaken. Briefly, conflicting values, orientations, allegiances and preferences have been exposed, argued and usually reconciled. Making goals explicit in comprehensible form has been painful. Facing the realistic compromises necessary to produce a balanced program in the time available has been, and will continue to be, difficult. Nevertheless, a beginning framework has been formulated. It holds immediate promise in charting the areas covered by modules already developed or in process and in identifying the many gaps which need to be filled by subsequent work here and elsewhere.

During the past year and a half, the Center staff has been under considerable pressure to produce as rapidly as possible those developmental products which their previous research and experimentation justify. As this work has gone forward, we have made a good beginning in the development of prototype modules in most areas called for by the conceptual design. Increasingly apparent has been the concurrent fact that other kinds of products are also essential and desirable if we are to remain a healthy and fully productive Center exerting significant influence on teacher education nationally. Becoming a "module-producing mill" could be a very sterile process if research of both a basic and evaluative nature did not accompany the undertaking. Publication through normal professional channels has increased during the past year and needs to continue as a means of informing teacher educators and educational researchers of our contributions across the research-development continuum. Our work in assessment, instrumentation and codification systems development and analysis is often not reportable in modular form. Even in module production itself, we are recognizing several kinds of diversity, a condition which we believe is reasonable and certainly better at this stage than regimented form or length. For example, one "module" designed to prepare teacher educators to interpret a battery of assessment instruments is sufficiently complex to require several weeks of study. Other "modules" may consume only 30 minutes. In addition, some of our modules are intended for prospective or inservice teachers while others are aimed at teacher educators. Differentiating terminology will undoubtedly be developed to point more clearly to the various facets of our modularized approach We are convinced that the developmental emphasis of the past year-and-a-half has been timely and productive. Fortunately, it has not led to a serious unbalancing of our total efforts or record of products.

No overview of the Center would be complete without mention of the various kinds of support which make the functioning of such an organization possible. On the positive side, the first four years of support has enabled us to establish the Center solidly in its university base and to develop viable and mutually beneficial functioning relationships with teacher education components of the university, the public schools and the Texas Education Agency. We have engaged continuously in joint recruiting efforts and gradually collected a strong teacher education faculty with natural interests and expertise in R & D functions. Our efforts have become increasingly programmatic, and a number of our products have reached the stage of availability to other institutions. Only the promise of long-range support for intensive work in a specified target area could produce the kind of critical force we now have available.

On the negative side, constant level and then reduced-level funding has rendered impossible the rate of growth and some kinds of productivity which the original conception of the Centers visualized. If the new R & D institutions in education are to have their full impact, significantly increased funding is a necessity. We are pleased that this Center is providing some of the leadership with other Centers and Laboratories nationally in carrying this crusade forward with the executive and legislative branches of government. As a result of the reduced funding, we have been forced to cut support to some extent across the board, and some very promising programs have had very sharp reductions.

We are very gratified with the relatively high level of local support which the University provides for our operation. Unlike some local support figures, our administration has contributed approximately $70,000 per year of hard dollars to provide released faculty time for R & D service. Other contributions such as central computer time, CAI terminal time, overhead reduction and the like add considerably to the resources we can bring to bear on our problem area.

Over the period of our existence, the University has often gone the extra mile in its efforts to provide space for our operations. Unfortunately, the University has been in a period of unprecedented growth, and its building program, in spite of its enormity, has not kept pace with that growth. Along with most other departments, centers and offices, we have suffered from insufficient and inadequate space. Most difficult has been the fact that our staff has been scattered in at least four different buildings, many blocks apart. In spite of shuttle buses, this scattering has created difficult problems of communication, coordination and management.

With the greatest of pleasure, we foresee an early end to these difficulties. About a year ago, the University authorized complete reconstruction of an existing building in a complex of buildings which is to house the College of Education. Construction is now well along, and we anticipate occupancy by January 1, 1970. For the first time, all R & D personnel will be under the same roof.

This overview has discussed the development of this Center over the past four years with respect to a number of broad and general patterns and trends. The history, present status and major thrust of its several substantive programs follows in considerable detail. These reports outline the real work and productivity of this Center.

If the reader of this overview is left with the impression that we have arrived or have all problems solved, we have communicated badly. If he recognizes a Center self-estimate which includes a clearer sense of direction, reasonable satisfaction with the evolved organization, pride in some accomplishments and products and confidence in our coming of age as a productive R & D instrumentality, then he has heard what we have intended to say.

THE CONCEPTUAL FRAMEWORK

Michal C. Clark

The program of the Research and Development Center for Teacher Education has two major aims:

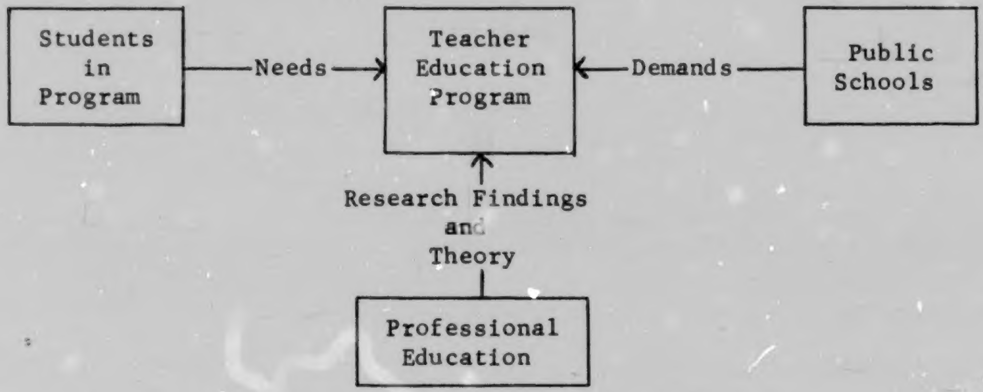
1. Basic research on the effects of varied kinds of teacher education on actual teaching behavior; and research on the subsequent effect of such teaching behavior on relevant aspects of pupil learning.

2. The development of a teacher education system composed of a diversified array of many relatively small instructional modules. Such modules can be arranged in differing combinations to provide flexible and individualized patterns for the teacher education programs of various individuals. These modules and the ways in which they can be organized into teacher education programs will be derived and revised so as to reflect relevant research findings.

These two aims can be restated so that the major focus of our R & D Center becomes carrying out certain basic research investigations in the area of how teacher education variables effect teachers-to-be and, ultimately, pupils in the public schools, and developing a modular teacher education program consistent with research findings (both our own and others) in the area of teacher education. Our Center is engaged in research, product development and relating these two activities in a systematic manner. Thus, a description of the conceptual framework for the modular teacher education program and a description of how that conceptual framework influences research and vice versa will serve as an integrative model for many of the activities of our Center.

This conceptual framework can be viewed as a model teacher education program. Figure 1 indicates the major sources of influence that were considered in developing the model. This diagram becomes most meaningful when the program is described as a set of competencies which the teacher-to-be must acquire during her preservice training, her student teaching experiences and early in her career. These competencies and the program to bring about their acquisition are based upon our using appropriate, relevant research findings and theories to create a system which meets both present and anticipated future demands of public school officials while being constantly relevant to the needs and concerns of the teacher trainee.

Figure 1. Sources influencing the development of our model of a teacher education program.



So that this program might be developed, we have agreed upon a set of goals for the program. These goals are operationally defined by the set of competencies the teacher must achieve. Within each competency, specific, assessable objectives can be written at each of five levels of performance. Instruction to bring about achievement of a set of objectives by the teacher-trainee is the purpose of a module. Then, the program can be physically represented by a library of modules. A management system for integrating the modules into a continuous, meaningful program for the teacher-trainee is also being developed.

This section of the annual report will describe the model for this teacher education program. Following sections will indicate modules that are currently being developed or have been completed. Those sections will also specify research projects relevant to module development. The instructional management system, which integrates the modules, and a module production and quality control system, which facilitates module production while maintaining a high quality product, will be mentioned in this section. Both systems will be described at length in papers forthcoming in the next two months. Thus, our Center has made a good start in developing this teacher education program. The goals have been set and the necessary competencies specified. From these, needed modules can be defined and production priorities assigned. Several modules have been completed. A system for managing the use of the modules is immediately forthcoming. Also, a system to guide and facilitate module production and to insure quality control has already been implemented. This latter system, along with the model, allows our progress toward our Center goals to be assessed.

This conceptual framework is a product of the deliberations of the conceptual design committee during the past year. The conceptual design committee carefully considered the following:

1) goals of a teacher education program--including those for the program, those of teaching in general and those which teachers would use in their own work;

2) the program itself--teacher-trainee competency objectives and how to arrive at them;

3) assessment as to the teacher-trainee's achievement of these objectives;

4) individualization--including both selection of candidates and personalization of the program to make it more relevant to the teacher-trainee.

Out of these considerations, nine "lines of inquiry" or guiding questions were derived. These "lines of inquiry" were applicable to teacher educators, teacher-trainees and teachers in the public schools. The "lines of inquiry" represent concerns of teacher educators about what they should know and about what their teacher-trainees should know and concerns of teacher-trainees about what they should know with respect to (1) the teacher-trainees's development in becoming a teacher; (2) developmental characteristics and forces which influence pupil development; (3) learning theories; (4) the substantive content of given disciplines; (5) what should be taught in given disciplines; (6) how content from given areas should be taught; (7) the purposes for the selection of content and teaching processes; (8) the total environment of learning and (9) diagnosis of the progress of persons to be taught. These nine areas of concern evolved out of an attempt by the teacher educators on the conceptual design committee to use their expertise and experience in designing a program which would reflect the demands of public school systems, the needs and concerns of teacher-trainees and their own professional integrity.

These nine lines of inquiry were intended to serve as guidelines for structuring a program to produce a teacher who is responsive, flexible teacher, an authentic person and an effective professional. This same intent continues in the development of the model program of which the description follows. The goal of this model program is still quite equivalent to the goals and concerns expressed in the original statement of the nine lines of inquiry, and the model program has the same aim.

However, the following statements of the goal and its derivatives have the advantages over the original statement of being more compatible with a modular program and of serving as more effective guidelines in delimiting modules to be produced and in setting up priorities for module production. The seven-fold goal of the model program is to produce the following type of teacher:

A. A teacher who is aware of herself as a human being functioning with other human beings in her environment.

B. A teacher who is competent in her subject matter specialization area(s) and able to relate appropriate subject matter to her students.

C. A teacher who can design and initiate effective instructional activities for her students.

D. A teacher who is aware of each student being a human being and who assumes her responsibility to encourage each student in his unique development.

E. A teacher who can interact effectively within his school system.

F. A teacher whose teaching is relevant to community and societal needs and demands.

G. A teacher who functions responsibly as a professional.

It seems that such a teacher would indeed be responsive, flexible and effective in her teaching, and she would be an authentic person.

From these goals and from the earlier lines of inquiry were generated a set of competencies which specify skills, abilities and other characteristics that a teacher should have. These competencies can also be considered to be concerns that teacher educators have for qualities to be developed in their teacher-trainees. The competencies provide a conceptual structure which rather directly yields a specification of modules which are necessary to the program.

The competencies were sorted into the following categories each of which corresponds to a topic central to all of the competencies within that subset:

A. The person within the teacher

B. Subject matter as relevant to teacher and learner

C. The design of instruction to enhance learning

D. The learner as a person

E. The school as an operating system

F. The influence of the community

G. The teacher as a professional

Each of these categories corresponds to its respective part of the goal for the program. The goal of the program is then more operationally defined by the entire set of competencies. Tables I-VII present the set of competencies organized into the seven categories. Each competency is stated as an ability. The categories are ordered so as to reflect (somewhat) the sequences of developmental stages of a teacher-trainee in her professional development.

Within each category the competencies are ordered with respect to the following three steps:

1. Those requiring personal relationships to the topic and those which primarily involve acquiring a "textbook" sort of knowledge;

2. Those requiring generalized rules and strategies for teaching;

3. Those requiring considering a specific case or individual and making specific diagnoses and prescriptions concerning an individual case.

This ordering is quite loose, but it does again attempt to reflect a sequence of developmental stages that a teacher-trainee passes through in her professional development.

Table I
Competencies to be Acquired by the Teacher-Trainee in the Model Program:
A. The Person within the Teacher

Ability to:

- view life as a dynamic process as opposed to a static state
- assess your abilities
- recognize your physical handicaps and limitations
- recognize your needs (physical and psychological necessities for survival) as a person
- assess your attitudes and beliefs
- fulfill your needs for attainment of personal goals
- fulfill your needs for attainment of professional goals
- use your experiences to develop yourself
- use reactions of others to you in order to develop yourself
- be aware of the influence of community and institutions on your life
- be aware of the influence of peer relationships on your life
- be aware of the influence of family relationships on your life
- be aware of the influence of marriage (potential or actual) on your life
- encourage existence of an environment in which there can be differences of opinion
- function in many roles in the environment
- be aware of how you affect other people
- be aware of your impact on children
- establish being a responsible human being as a goal
- assume responsibility for consequences of your actions
- be aware of your good (or bad) mental health
- self-appraise your development at any point in time

Table II
Competencies to be Acquired by the Teacher-Trainee in the Model Program:
B. Subject Matter as Relevant to Teacher and Learner

Ability to:

- obtain knowledge of the relevant subject matter area(s)
- obtain knowledge of the structure of relevant subject matter area(s)
- relate your subject matter area(s) to societal needs
- be aware of your lack of interest in some subject matter area(s)
- be aware of subject matter appropriate for students
- communicate clearly within your subject matter area(s)
- teach reading, writing, and mathematics as relevant subject matter to your content area(s)
- be aware of and use materials available in various media within your subject matter area(s)
- use inquiry skills in teaching relevant subject matter
- relate various subject matter areas so as to provide an interdisciplinary approach when appropriate
- be aware of optimal sequencing of materials in your subject matter area(s)
- be aware of why a subject matter area is relevant
- relate student interest and material in your subject matter area(s)
- be aware of possible lack of interest of some students in certain subject matter
- individualize instruction within your subject matter area(s)
- diagnose students' progress or deficiencies in your subject matter area(s)
- prescribe compensatory or remedial materials in your subject matter area(s)
- encourage "creativity" within your subject matter area(s)

Table III
Competencies to be Acquired by the Teacher-Trainee in the Model Program:
C. The Design of Instruction to Enhance Learning

Ability to:

- be aware of the relationship of instruction to the total development of the child
- be aware of the requirements of your content area(s) with respect to principles of instructional design
- be aware of the requirements of students with respect to principles of instructional design
- consider how a student's aptitude can relate to his learning in designing instruction
- establish goals within an educational program
- derive measurable objectives from goals
- select (or develop or improvise) an appropriate instructional activity to bring about the achievement of a desired objective
- implement affective as well as cognitive instructional activities
- orient instructional activity to a desired level of learning (memorization vs. concept)
- evaluate learning outcomes at a desired level of learning
- select optimal media for a given instructional activity
- maintain continuity through instructional activities toward the same set of goals
- evaluate student performance with respect to objectives
- assess continually the effectiveness of instructional activities
- design instruction for large and small groups as well as for individuals
- modify instructional activities contingent upon student responses during that activity
- prescribe specific instructional sequences to facilitate an individual's attainment of objectives
- optimize instruction for each individual student
- make instructional activities meaningful to the self-realization of the learner
- modify instructional activities to meet individual needs and demands
- implement educational innovations within your class

Table IV
Competencies to be Acquired by the Teacher-Trainee in the Model Program:
D. The Learner as a Person

Ability to:

- be aware of how a child learns
- be aware of developmental stages and their effects on learning
- be aware of a child as a product of cultural, social, and familial backgrounds
- be aware of the incongruities a child faces in his development
- be aware of the dangers of alienating a child from his home and culture
- be aware of the relationship between learning and motivation within a child
- be aware of how the goals of educational programs affect a child's future
- communicate effectively with a child
- be aware of the effects of success and failure on a child's goal attainment
- communicate test results to a student in a meaningful way
- conduct conferences with a student
- direct a student to use effectively the appropriate available resources within your school
- promote good mental health in a child (and in your class)
- recognize and react to characteristics of poor mental health in a child
- diagnose learning problems in a child
- deal with "special learners"
- teach an individual student to pay attention
- arouse a student's interest(s)
- encourage a child to become an active learner
- encourage healthy peer relationships
- discriminate role differences (of people)
- encourage existence of an environment in which there can be differences of opinion
- encourage a child to cooperate with others in achieving common goals
- encourage a child in his role as a participating member of society
- become aware of learning styles of individual students
- assess a child's attitudes and beliefs as they relate to his learning
- create a classroom climate conducive to individual learning
- make education relevant to a child
- set meaningful goals for a child
- identify appropriate sources of motivation for a child

assess a child's pace of growth and learning
coordinate learning experiences with a child's past experiences
create a classroom climate supportive of developing a child's self-concept
provide personal counseling for a child
teach a child to assess his own motives and values
encourage a child to become a responsible person

Table V
Competencies to be Acquired by the Teacher-Trainee in the Model Program:
E. The School as an Operating System

Ability to:

- be aware of the varieties of working conditions in different schools
- be aware of what your school expects of a teacher
- be aware of the administrative structure within your school
- use effectively the resources of your school
- use effectively the supportive services of your school
- cope with the internal political-bureaucratic structure at your school
- survive in the school as an operating system
- deal effectively with administrators and supervisors
- work with other teachers
- manage your classroom effectively
- interpret school to parents
- be aware of the interrelations of programs in your school to the mission of your school
- be receptive to and participate in innovative educational programs

Table VI
Competencies to be Acquired by the Teacher-Trainee in the Model Program:
F. The Influence of the Community

Ability to:

- be aware of the cultural factors which influence the education of a child
- be aware of the teacher's role in the community
- be aware of the community's influence on your school
- be aware of the need to coordinate curriculum and community demands and needs
- use community resources to augment opportunities available to your students
- cope with the effects of agencies in addition to your school that contribute to the education of a child
- be aware of the relationships between school, teacher, and social problems
- interact effectively with members of minority groups
- cope with your local PTA
- relate your school's activities to your community
- cope with parents
- be aware of how parental expectations influence a student's behavior
- gather information about a student's parents' expectations
- respect parent-child relationships
- involve parents in a child's learning activities

Table VII
Competencies to be Acquired by the Teacher-Trainee in the Model Program:
G. The Teacher as a Professional

Ability to:

- be aware of teaching as a profession
- be aware of expectations of professional educational programs
- assess your own prospects of becoming a teacher at appropriate times
- be aware of what a teacher does
- make a wise selection in choosing a professional position
- use and describe effectively standardized test results
- be aware of the resources and services which professional organizations offer to you
- participate effectively in professional organizations
- be aware of history of education as it affects current educational practices
- be aware of philosophies of education as they affect current educational practices
- gather and use valid information in carrying out professional duties
- be aware of your professional ethics
- communicate clearly to your professional colleagues
- be aware of the relevance of teaching to our society
- be aware of teaching as a client-centered, service profession
- enhance your teaching ability
- develop your best teaching style
- assume an adult, teacher role with your students
- continually assess your effectiveness as a teacher
- seek and use peer evaluation to improve your teaching
- help your colleagues improve their teaching
- care about and continually improve your profession
- keep abreast of new trends and developments in education

Within each competency the design specifies five levels of performance that the teacher-trainee should demonstrate before completing the program. These levels provide a taxonomy of cognitive functioning within each competency. The five levels are labeled and defined as follows:

1. Knowledge and Memory - The acquisition and retention of information which may be used without necessarily relating it to other materials or seeing its fullest implications. This information is retrievable only in the same form it was learned.

2. Conditions for Application - The acquisition and retention of boundary conditions for when, where, why and how information or rules acquired as knowledge can be applied in teaching situations. This information provides necessary conditions and "structures" for integrating information acquired as knowledge.

3. Deriving Meaning - Alteration of information into concepts, interpreting information and making inferences, predicting trends and drawing conclusions from given information.

4. Diagnosis and Prescription - The application of what has been learned to find out what is needed and generate a solution in a teaching situation. These processes require the application of appropriate facts, tactics, strategies, etc. that have been learned to solve specific problems that confront the teacher.

5. Evaluation and Modification - The process of seeking information concerning how adequate your diagnosis or prescription was and then modify your knowledge "structure" by incorporating any appropriate information that was found. These processes allow the teacher to find out how effective her performance is and modify her knowledge structure, her belief system, etc. in order to continually upgrade her performance.

These levels of performance are hierarchically arranged. That is, some part of a competency must be acquired at level one before level two, before level three, etc. When level four and level five (Diagnosis and Prescription and Evaluation and Modification) can be demonstrated by the teacher-trainee, then she has achieved the competency. Within a competency, the instructional objectives at a specified level of performance are largely determined and/or delimited by that level. For example, objectives at the Knowledge and Memory level are primarily ones which require the acquisition of specific information; while those at the Diagnosis and Prescription level primarily require the application or transfer of previously acquired information to a specific (and probably previously unencountered) situation. Thus, these levels of performance when used with all of the competencies provide a schema for the generation of all of the educational and instructional objectives necessary for the model teacher education program.

This entire conceptual framework is represented as a three dimensional cellular structure in Figure 2. Reference to the figure and its description which follows should enable the reader to combine the complex foregoing descriptions into one integrated picture.

The front surface of the box represents the entire set of competencies organized into their seven categories (the horizontal dimension). The vertical dimension represents the ordering of competencies within each category. The three general areas used for ordering the competencies are indicated. The competencies dealing more with personal relationships and knowledge are at the top of the surface to reflect the order in which they were presented in Tables I-VII. It must be noted that the categories of competencies each contain different numbers of competencies. Thus, the front surface should either have a jagged bottom or several blocks of space. The rectangular surface is used for case in representation. The depth dimension of the box corresponds to the five levels of performance. It can be readily seen that every competency is considered at all five of these levels.

It must be noted that the competencies are all stated in general terms. That means that several of the competencies must have several sets of objectives stated and modules built within them to provide for different areas of subject matter specialization of the teacher-trainees. That is, for almost any competency in the subject matter category, the competency could be stated as it would apply to someone who would primarily teach science, and then it could be stated as it would apply to a future teacher focusing in the area of social studies, and so forth. All such competencies must have several sets of modules to provide instruction relevant to them -- one set for each subject matter area which necessitates differentiation from the general statement. This differentiation could be represented in Figure 2 by thinking of having several small blocks to fit into each of the cells demanding such treatment. It must further be noted that this differentiation is expected to occur primarily in the subject matter category.

This representation is helpful for monitoring and coordinating module production. By allowing module designers to see what modules have been completed and which ones are needed, they are better able to see how a module they might want to build

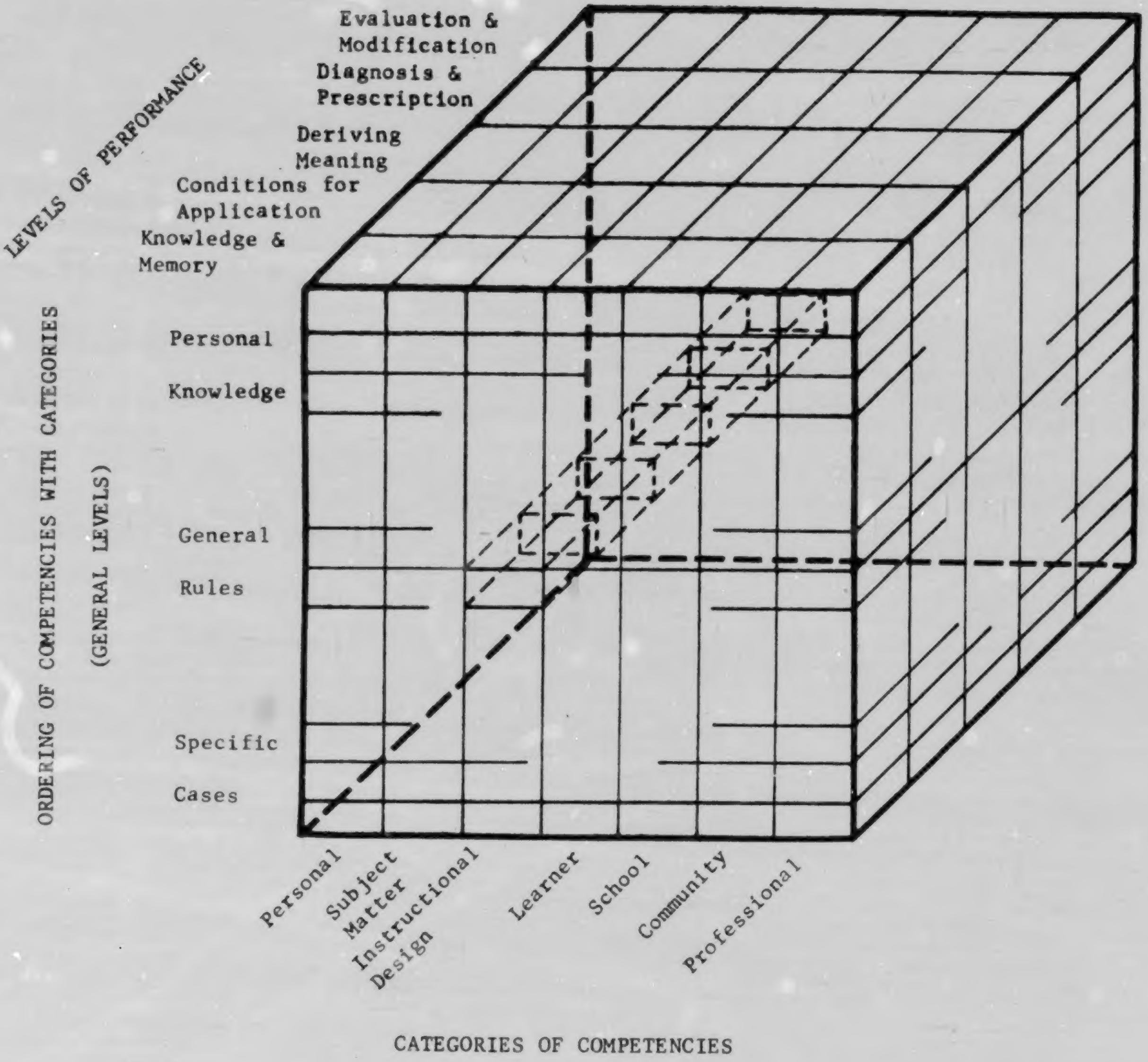

LEVELS OF PERFORMANCE
Evaluation & Modification
Diagnosis & Prescription
Deriving Meaning
Conditions for Application
Knowledge & Memory
ORDERING OF COMPETENCIES WITH CATEGORIES
(GENERAL LEVELS)
Personal Knowledge
General Rules
Specific Cases
Personal
Subject Matter
Instructional Design
Learner
School
Community
Professional
CATEGORIES OF COMPETENCIES

Figure 2. Diagrammatic Description of the Conceptual Framework for the Model Teacher Education Program

fits into the program. If the proposed module does not fit, they can see what module would fit and still be related to the original proposal.

This conceptual framework is very appropriate to be used by an R & D Center which is trying to produce a modular teacher education program. Since each competency will require at least one and maybe eight or more modules to insure instructional sequences to bring about student achievement, a large number of modules must be produced. Such production requires the resources and coordination which can only be supplied by an R & D type of endeavor. This conceptual framework provides the guidelines to allow adequate coordination of a large number of module builders. It allows progress toward the goal of completing the program to be monitored. It also provides the guidelines to help in adapting materials from other R & D Centers, Regional Labs, and any other source and transforming them into modules which fit into the program. That is to say that our Center is not trying to re-invent the wheel. Rather, much of the instructional content for modules exists, and one of our major tasks is to put that material into a modular format and integrate it into the system of modules. This conceptual framework should prove to be quite valuable in facilitating that task. Thus, this conceptual framework seems quite appropriate to a modular teacher education program.

A modular teacher education program has several properties which make its development a desirable project for an R & D Center. The foremost property is the way research can be directly related to development and implementation of a program. Modules may be a direct spin-off from research activities. Modules may serve as independent variables for various sorts of experiments. In this case, research and good product development are inseparable. Furthermore, the modular program allows the effects of certain variables or sets of variables to be investigated as they interact with the total program. Modules demand that these variables be much more adequately defined than they must be in most other types of educational programs.

A modular program has definite advantages for our Center. Peck and Bown (The R & D Center for Teacher Education, Report Series Number 1, p. 16f) listed 12 points that reflected prevalent concerns of the personnel of this center for properties of a teacher education program. A modular program has the flexibility to incorporate all 12 of these points.

The three main attributes of a modular program which make the scheme ideal for a teacher education program are flexibility, potentials for individualization and compatability with existing institutional structures. There is no question that a system made up of numerous, small, self-sustaining units of instruction can be flexible. A modular system then has the advantage of giving someone who is supposed to become a flexible teacher an opportunity to become educated in a truly flexible system.

The modular system provides great potentials for individualization and personalization. Individualization can occur within the modules or between them. Within a module, individualization is carried out in a manner analogous to branching in programmed instruction. Between modules, individualization results from having different modules trying to achieve the same purpose and by a management system which allows some sort of self-pacing and self-selection in the program. The notion of different modules to achieve the same purpose allows learner characteristics to be considered in developing the materials. One module might be developed for a learner who prefers learning by a "discovery" approach; another for a learner who prefers a more "didactic" approach, and so forth. This method of individualization is almost inherent in a modular program. Personalization comes about in the way modules are constructed and especially as a function of the instructional management system used in the program.

A modular teacher education program represents a major innovation in teacher education. Yet, the program is compatible within the prevalent institutional structures and limitations of most teacher education institutions. Ideally, a modular program would abolish the traditional course nature of teacher education. But, initially at least, modules can be used as either the basic curricula of the courses or as supplementary materials to augment the more traditional approaches.

Further discussion of advantages and appropriateness of a module teacher education program can be most meaningfully discussed with reference to this program. Such reference requires that a few major points about this program be presented. A module must be defined, and the relationship of an individual module to the conceptual framework must be pursued. The necessary instructional management system and a mechanism for facilitating the production of the program must also be mentioned.

In general, a module is the smallest, meaningful unit of instruction in the program. Within the conceptual framework of the model program, a module has a set of necessary and sufficient attributes. First, a module must "fit" into the conceptual framework as described above. That is, the objectives of a module must be derivable within a competency at the various levels of performance.

Objectives must be clearly stated and be assessable. The set of objectives for a given module must be comprehensive so that when a teacher-trainee has achieved all objectives in a module, she will have achieved the goal or purpose of the module. In the same way, when the teacher-trainee has achieved all of the objectives in the modules within a competency, she will have achieved the competency. This unambiguous statement of objectives is the second attribute of a module.

Third, a module must contain sufficient diagnostic materials to assess performance with respect to objectives. This assessment material must be adequate to provide decisions for branching out if there is individualization within the model. The assessment material must also be appropriate to the level of performance at which the objective is aimed.

Obviously, a module must include instructional materials or plans for activities, etc. The fourth attribute, the necessary materials (any needed films, tape, apparatus, etc.) must be clearly specified, and they should be included in the modular package. The instructional activities should use a media form which should be most effective and efficient in bringing about the desired learning in the user. Many modules will be of a self-instructional variety. Others will involve intervention of the teacher educator in the activities in a carefully planned way.

Fifth, the module must contain materials or make provisions for arousal of teacher-trainee concern for its content. This implies a dimension of arousal-resolution within a module. This dimension does not have to be included in its entirety within every module. That is, within a set of modules, a good deal of emphasis on arousal might be placed in one of the early modules. The aroused concern would be sufficient to cover the objectives for the entire set of modules. The modules coming after the "arousing" one could then primarily concern themselves with resolution. This arousal-resolution dimension, especially when a given concern extends across modules, seems like a powerful tool for maintaining teacher-trainee interest in the program.

The size of a module is the sixth important attribute. The "smallest, meaningful unit of instruction" is a rather ambiguous size specification. It is impossible to restrict a module to a size (pages, words, feet of film, etc.) or time limit. The size of a module is a function of the number and complexity of objectives. Within a given module, the objectives must all be related in that they must define a more general goal or purpose which directly relates to a competency. This constraint on objectives insures that a module will be a meaningful unit of instruction that is nearly as small as it can be without detracting from meaning. Due to the variance in complexity of sets of objectives, especially when there are differences in levels of performance between sets, it is anticipated that completion time for the user of a module will range from around 20 minutes to many hours.

Seventh, a module must be field-tested before it can be distributed for general use. The module must be modified in accordance with indications in the data obtained in this pilot testing. This testing and revision insures that a module is usable and effective. Modules should continue to be revised as teacher educators use them so as to continually improve their effectiveness and efficiency.

The eighth attribute of a module is that it must include sufficient documentation for the user. It must provide clear instructions for its use, and should present relationships between it and other modules. The intended population for use should be described. The results of pilot testing and field testing must be reported. Various descriptive characteristics such as average time to completion, necessary materials and necessary prerequisites of the module must be included. The teacher educator, then, can use his own discretion to decide how much, if any, of the material needs to be presented to the teacher-trainee.

The final attribute is a derivative of several of the others. A module must be self-contained. That is, it must contain sufficient materials to be used independently of our model program. Within the model program, modules are inter-dependent in that the objectives from all modules relate directly to the same conceptual framework. Modules can also be related or dependent through the extension of the arousal-resolution dimension. The instructional and assessment activities within a module must be independent of all other modules. This self-contained package property allows an individual module or any set of modules to be used by a teacher educator who wants modules for some specific purposes, but who does not want to use the model program. This property is a guarantee as to the compatability of the materials produced by this R & D Center with existing teacher education programs. In practice, it is likely that teacher educators will adopt a series of related modules, rather than single, short modules, in an effort to develop arrays of understandings and skills which are mutually related.

To more fully explain some of the ramifications of this model teacher education program, the relationship between this definition of a module and the conceptual framework needs to be further specified. The conceptual framework specified a set of competencies to be attained by a teacher. From these competencies, along the levels of performance, a set of specific goals can be derived. A module would address one of these goals, and its objectives would operationally define the goal. A competency is operationally defined by all of the objectives contained in the modules within the competency. The assessment of performance in every module should be adequate so that successful completion of the set of modules for a given competency insures achievement of that competency. Hence, modules become the media for bringing about competency attainment. It is hoped that as the system develops, more than one module directed toward each goal will be available to allow for individualization in the modules a teacher-trainee uses to attain the necessary competencies.

The sequencing and integration of modules into a teacher education program will be the function of an instructional management system. The instructional management system has not been sufficiently developed to warrant description in this report. A clear, concise description should be available by mid-October. The instructional management system must have the following operating characteristics. It must monitor individual teacher-trainee progress through the modules. It will have data manipulative properties to allow it to help the teacher educator at any point in time to diagnose teacher-trainee achievements, prescribe further modules to optimize competency attainment, allow the teacher-trainee to participate in goal selection and maximize personalization and facilitate meaningful interaction between teacher-trainees and between staff and trainees. In addition, this system will help teacher educators to revise modules and continually improve the entire teacher education system as well. The management system will rely upon interaction with a computer facility when such access is possible, but it will also be made available in a somewhat less efficient form which does not require computer access.

In order to facilitate the achievement of the R & D Center goals, a system for module production and quality control has been designed and implemented. This system describes steps in the module production process at which sub-products of the module can be extracted and examined. By so doing, these sub-products can be analyzed to insure acceptability in accordance with a set of criteria which have been derived. By allowing efficient scheduling, the system facilitates production. Since sub-products are reviewed by different staff members at the different points of extraction, this system will also facilitate communication among R & D personnel, and it should increase the production of modules for an integrated system as opposed to production of a set of unrelated modules which must be forced into a program structure. This module production and quality control system and its implementation will be discussed at length in a forthcoming R & D Report.

A further justification for this model teacher education program, and hence, for this conceptual design for our R & D Center, can be made by considering the potential advantages this program could have. Some advantages have been mentioned previously. The following list provides a more comprehensive picture of the advantages and reasons for deriving this particular conceptual framework and model program:

1. This modular system allows for a great potential in individualizing and personalizing teacher education.

2. Teacher education can be made more relevant and meaningful to all involved in the undertaking.

3. By reconceptualizing student teaching to be a "laboratory" experience which accompanies the formal modular program, experiential learning can be maximized and implementation of educational innovation can be facilitated.

4. The probability of later, successful participation of the teacher-trainee in inservice programs can be increased, since the distinction between preservice and inservice training becomes one of different relative amounts of time spent on formal modular work and experiential work in the two situations.

5. The model program represents a major innovation in teacher education, but the components of the program are highly compatible with traditional institutional and educational structures. This compatibility should increase the immediate "marketability" of the components, an action which could, in the long run, increase the probability of the implementation of the entire program at other institutions.

6. Module content can be obtained from many sources. Materials that have been developed in other places can be adapted and placed into the modular format and structure.

7. This framework provides for quality control in the systematic development of educational products. These properties should insure a product with a high a priori probability of being successful in its use.

8. By placing teacher-trainees in an innovative, flexible program, they will be presented with a new model of teaching that increases the probability of them achieving the objectives of the program. From this experience they can also be expected to be more willing to welcome innovative teaching into their future classrooms.

9. By individualizing instruction and allowing the teacher-trainee to share the responsibility for her learning, it is more probable that she will become a professionally dedicated teacher if she chooses to finish the program.

10. The program provides for a continual updating and improving of itself and its components.

11. The model program implemented in its entirety would allow the length of time for completion vary with an individual's demands and abilities. Hence, a student could complete the program in a year if necessary. Also, a student could afford the luxury of waiting until her senior year in college (or later) before deciding to enter the program. This fact increases the prospects of getting teacher-trainees who will want to become dedicated, professional teachers.

There are at least two immediate problems facing the development of this program. The first is primarily a coordination problem in maintaining sufficient cooperation in working toward a common goal so as to complete the development of the program components and actually implement the program. The second involves the instructional management system. At the present, there is essentially no functioning instructional management system with similar properties. To develop such a system which will allow itself to remain sufficiently flexible to facilitate program improvement could at this time be somewhat premature for existing computer and management system technology. Both of these problems should readily come under control with adequate support from both within and without the R & D Center.

One final point which must be reiterated and emphasized is the relationship between research and module development. Many modules result as direct spin-off from research projects. More importantly, the modular structure of this program will allow teacher education variables to be operationally specified. Modules become such variables. The effect that these independent variables produce on both teacher-trainee performance and, then ultimately, public school pupil performance, can be systematically studied. The results of these studies are then immediately incorporated as revisions in the modular teacher education program. The tedious route from research to development is substantially shortened by using this modular format. Hence, the conceptual design for the model teacher education program can be considered as the conceptual design for this R & D Center. The relationships of module developing to research reports will be evident in the project descriptions presented in the next section of this annual report.

PROJECTS AND ACTIVITIES

TOO GOOD
TO MISS

02.01

DATA PROCESSING

John R. Sheffield
Donald J. Veldman

The activities of this division were subsumed under the title "Research Methodology and Data Processing" prior to the April 1, 1968, reorganization of the R & D Center. The present division is concerned solely with research design and quantitative data processing and analysis; activities involving the design and development of assessment instruments are the responsibility of the Assessment Division (03.03).

Resources of the Division

This division is responsible for maintaining data-processing facilities for all divisions of the R & D Center. In addition to two desk calculators, a group of card-processing machines is also operated by staff of this division:

407 Line Printer
514 Reproducer
029 Key-punch (4)
029 Interpreting Key Punch
056 Verifier
059 Verifier
085 Collator
083 Counter-Sorter

Staff members of this division include a key-punch supervisor, three key-punch operators, two unit-record equipment operators, two computer programming specialists and a graduate research assistant.

The staff utilizes the hardware resources of the central University Computation Center as well. All programming is in FORTRAN for the CDC6600 computer, although other machines such as the CDC160 computer at the Computation Center and the Digitek optical scanner at the Measurement and Evaluation Center are also used for some R & D Center projects.

Service Activities

Since the inception of the R & D Center, this division has provided consultative assistance and data-processing services to all other divisions involved in the use of quantitative techniques. Depending on the sophistication and capabilities of the staff members of the other divisions, the nature of the services rendered varies greatly. In some cases, a few hours of discussion reviewing a research design is sufficient, while in other cases only card-punching services have been required. The policy has been to avoid assuming full responsibility for the design and conduct of any substantive research by other divisions of the R & D Center.

Major efforts by this division to date are summarized below, but these account for roughly a third of the division's consultative and service activities. Minor consultations and services to other divisions and individuals inside and outside the R & D Center consume roughly another third of the effort, with the remainder devoted to internal maintenance and methodological development.

Assessment Division

Because of the obvious dependence of assessment activities upon data-processing resources, this division devotes the major part of its efforts toward facilitating the processing of data collected with psychological assessment instruments. A variety of special-purpose computer programs have been developed for these activities.

Of particular significance in terms of staff time has been the problem posed by the data-reduction from the paper tapes produced by the Flexowriters modified for use in coding behavior from videotape records. A long series of hardware deficiences and software complexities has plagued this development for more than a year. Although some output of summary data is finally being achieved with the available equipment, these problems will not be adequately solved until delivery of a new paper-tape reader to the University Computation Center. The present estimate for this delivery is November, 1969.

Science Inservice Project

Dr. David P. Butts and his colleagues have undertaken an extensive series of formal research projects concerning the efficacy of the inquiry approach to the teaching of elementary-level science. These studies have involved both pupils in public schools and university teacher-preparation courses. The Data Processing Division has provided advice regarding research designs and analysis, as well as reviews of many of the research reports resulting from these studies.

Individualized Instruction Project

The so-called "team-teaching" project with which R & D Center personnel have been partially involved collected a variety of data on the characteristics and behavior of the members of experimental teaching teams. The Data Processing Division provided a variety of data-processing services, as well as occasional consultations regarding feasibility and execution of particular analytic procedures.

Personalization Division

Until recently, this division included personnel who operated with relative autonomy with regard to the design and execution of quantitative research. As of July 1, 1969, however, this division will rely upon the Data Processing Division and the Assessment Division for consultative assistance and implementation of data-processing procedures.

College of Education Assessment Program

In conjunction with the Assessment Division, a considerable effort is devoted each semester to the routine processing of data collected by the staff of the Dean's office from every student enrolled in the introductory Educational Psychology course. Data from certain instruments is key-punched, reduced to scale scores and compiled for normative purposes. Details of these procedures may be found in the report of the Assessment Division (03.03).

Consultation with Other Researchers

The staff of this division cooperates in a variety of methodological investigations conducted by other research organizations and individuals too numerous to list in this report. Such cooperation ranges from brief telephone consultation about the operation of statistical computer programs or the use of particular statistical techniques to the writing and/or debugging of special purpose routines. Because of the severe shortage of people with true competence in both statistical procedures and computer programming, and because of the benefits of the interchange resulting from these contacts, this division has been relatively open-handed in providing assistance to researchers who are not formally supported by the R & D Center.

Statistical Methodology Research

The Data Processing Division of the R & D Center, in addition to its service and consultative functions, has carried on a continuing program of basic research in various aspects of the methodology utilized in quantitative research. Most of these efforts have been directed by D. J. Veldman, with the aid and advice of J. R. Sheffield, the administrative coordinator of the Data Processing Division.

Computer Programs

A general-purpose library of computer programs developed prior to the inception of the R & D Center forms the basic core of routines which has been gradually extended to make full use of the capacity of the CDC6600 computer available locally. Additional general-purpose programs have been developed for three-way chi-square analysis, two-between-one-within factorial analysis of variance, intra-class correlation, covariance analysis and for extensions of many other standard techniques. This library is used by many research organizations in a wide variety of behavioral sciences and other fields. R & D Center staff provide consultative assistance to both students and faculty researchers from other federally supported projects on campus and elsewhere.

Monte Carlo Simulations

A series of simulation studies has been recently completed to test the practical importance of certain assumptions of inferential statistical methods that are crucially important to decisions regarding choice of techniques and experimental designs. One of these studies demonstrated conclusively the inappropriateness of the long-accepted "continuity correction" of chi-square, supporting work done elsewhere on this topic. Another study investigated the influence of skewness on the distribution of the correlation coefficient, showing that only severe skewness in a common direction affected the distribution of r appreciably. A third study vividly demonstrated the severe inflation of the F-ratio for treatments when the wrong (but commonly used) error term is employed in analysis of data from a hierarchical experimental design.

The results of these analyses are now being prepared for a Research Methodology Monograph, which will also include computer programs illustrating the manner in which other studies of this type can be designed and executed.

Factor Rotation toward Hypotheses

Research Methodology Monograph No. 8 (D. J. Veldman) describes the theory and methodology by which an arbitrary factor analytic solution can be rotated toward a theory-based hypothesis structure. Although the computer program was included in Veldman's book (FORTRAN Programming for the Behavioral Sciences, New York: Holt, Rinehart and Winston, 1967), this application was not discussed. In this monograph, a series of examples of the uses of the procedure is included to illustrate the variety of practical research questions that can be answered with this objective technique.

02.02

TELEVISION

Bill H. Burns

As a service division of the R & D Center, the main function of the television section is to help obtain data for use by other project divisions in their research. Since its inception, TV has worked continuously to develop the most accurate and efficient techniques for gathering video taped data live in the public school classroom. Initial efforts to acquire information centered around the use of 8mm sound cameras and film, but today this is accomplished exclusively through the medium of video and audio taping. TV equipment acquired earlier includes a mobile video van, complete with cameras and studio control equipment, for operations in the field. The R & D Center houses complete facilities for feedback, editing and production of video tapes. Associated with this section are the Flexowriters and related electronic equipment for the coding of research tapes. This equipment has been added to and made more sophisticated in function and quality. Several hundred video tapes are catalogued and stored, available for interdepartmental observation and analysis. Over the past 12 months alone 259 half-hour and five one-hour video tapes have been recorded by this section at the request of various research divisions in the project.

Twenty-eight public school teachers (14 junior high and 14 elementary) participating in the Individualized Teaching for Effective Coping (ITEC) program (03.0203) were taped approximately five times each during the 1968-69 academic year for a total of 138 one-half hour video tapes.

Thirty-four one-half hour tapes were made of more than 20 elementary school student teachers who were taped first during a brief 5-10 minute session of instruction with one or two students and again presenting a specially prepared science unit to a full classroom for the Math-Science Project (04.0201).

For the Social Studies Module Building (04.0204) more than 43 student teachers were recorded in elementary classrooms, presenting their individually conceived and prepared lessons of an assigned social studies concept, a total of 61 one-half hour tapes.

Other video tapes made for R & D Center use include: three one-half hour tapes for the Longitudinal Study of the Development of Teaching Skills in a Teaching Laboratory (04.0103), three one-half hour tapes for Language Arts Module (04.0203) and a single half-hour tape for the Project on Thinking/Communication Skills (04.0104).

The television section has also made video tapes for agencies outside the R & D Center. These include five one-hour tapes of public school teachers for the Southwest Educational Development Laboratories and six one-half hour tapes of student teachers demonstrating special skills in teaching slow readers for the Reading Methods Course.

Besides collecting data, this division has also provided feedback of material gathered. During the past year the division has administered more than 300 hours of video feedback to individuals involved in the foregoing projects, as well as in response to miscellaneous requests from educators and agencies both on and off campus.

Approximately 100 hours of service were furnished to the Teaching Laboratory Module Building (04.0101) in combined video taping and feedback and in specifying, installing and maintaining video and audio equipment for the project.

With the increasing use and acquisition of video equipment and the expenses involved in its purchase and preservation, the TV section sought to establish a self-contained agency for the service and maintenance of its existing equipment as well as the selection and installation of new machines. To effect this, the division expanded in September, 1968, to include its own TV research engineer. Since that time the technical and production quality of R & D video tapes has improved steadily, the maintenance costs have been reduced and downtime due to equipment malfunctions has been practically eliminated. High technical and production standards have been set so that any tape will be of the quality necessary for editing and possible dissemination. The capability now exists to provide general information tapes on the TV section's activities and to allow for video-tape dissemination of the R & D Center's research findings.

In addition to maintenance and new equipment specification, the engineering activity has done research on operational techniques for securing optimum performance from TV equipment in data-gathering situations. Modifications have been designed and made to bring picture quality to a level closely approximating that of broadcast standards.

Engineer assistance has also been given to the Behavioral Assessment section of the center (03.03) in maintaining and improving the Flexowriter system, and technical aid has been provided to agencies within the UT system, such as the College of Engineering, as well as outside organizations like SEDL and IBM. More than 50 hours were spent dubbing audio and video tapes of research material for both R & D Center projects and outside agencies.

The Television Division has spent a great deal of time in the performance of a number of miscellaneous services during the past year. In conjunction with the Concerns of Teachers program (04.0301), almost 30 hours were spent photographing pupils and teachers in the Austin public schools to produce some 200 slides from which selections were taken for the slide presentation "Meet Your Cooperating Teacher." The division has also provided audio taping services and facilities for making tapes of special conferences, and has served the center by supplying audio tape and maintaining and checking out related AV equipment such as recorders, transcribers and projectors (with approximately 40 hours devoted to keeping these machines in working condition).

In summary, the television section has functioned as an integral part of each unit of the Center, aiding the entire project through the use of its various facilities, services and personnel.

02.03

DISSEMINATION DIVISION

David A. Wilson

Dissemination activities within the Texas R & D Center were a function of the administration staff and individual effort until the formal establishment of a Dissemination Division in the Spring of 1967.

A dissemination coordinator was employed and some effort was directed toward unifying the Center's communications. Few records remain from this first phase, which lasted but a few months, but the sole product of the period seems to have been a general brochure describing the Center's program at that time.

The tenure of the first dissemination coordinator was brief, and a new phase was initiated with the introduction of a second coordinator in September, 1967. Plans were laid for an ambitious publishing program, the cutting edge of which was to be a quarterly journal. An assistant editor was hired to assume the writing and editing tasks for that publication. Other plans called for brochures, a newsletter, and slide and videotape presentations. The plans remained on paper, however, as faulty internal communication links and a rapidly evolving program concept within the Center defeated efforts to initiate production.

The Dissemination Division languished as the Center struggled to find its footing in the modular teacher education approach. Then, as the Center's program concept began to jell, the services of a functioning Dissemination Division were sorely needed in order to capitalize on the new-found sense of purpose and convey its urgency to the education community.

The former assistant editor assumed the coordinator's post in September, 1968, with the understanding that the expectations for the division as set forth by his predecessor would be scaled down to more manageable proportions. The first need seemed to be for the construction of good basic communication habits within the Center. For the division to function adequately it needed the confidence of the Center staff in its ability to provide guidance in communications matters.

The basic weakness in the Center's communications seemed to lie within. Information did not flow freely between the physically and spiritually separate units of the Center. Without a healthy internal circulation of information on plans, procedures and progress the Center could not hope to communicate its work to outsiders.

In December, 1968, the first real products of the Dissemination Division began to appear. Publication began of the R&D Newsletter and Notes to Subscribers. The Newsletter is mailed twice a month to all R & D staff members and informs them of what is going on among their fellow workers and in the education community in general. It is mainly an employee-relations device. The Notes to Subscribers is an irregular series of memos sent to R & D faculty members and division coordinators. It shares interesting articles or excerpts of published views on timely topics in education. The purpose of this series was to encourage dialog between faculty-level staff members to accustom them to sharing ideas with each other as members of the Center family.

Another internal innovation was the formal establishment of an R & D Library. Housed in the Dissemination Office and managed by a research assistant, the library contains publications received from other centers and laboratories as well as periodicals and newsletters of interest to R & D personnel. All books purchased for Center staff members with R & D funds are also included in the library inventory, but cannot be included physically until they can be collected in the library space in the new building next year. Newly received publications are listed in the Newsletter and are available on loan. The broad contacts the library has offered with staff members has greatly expanded informal relations between the Dissemination Division and the groups within the Center with which it must work.

The foregoing innovations were all in the direction of stimulating internal communication circulation, but the greater goal was better external communication. Products began to appear for this market early in 1969, and the volume has increased from a trickle to a flow that is, today, using the full capacity of the division at its present personnel strength.

Biggest gun in the dissemination arsenal is the R&D Report Series. Since the Series' inauguration in February, 1969, some 17 papers have been disseminated and more are in the breech. Plans call for eventual inclusion of all R & D generated papers in the Report Series, rather than having individuals distribute their own reprints or mimeograph copies. Published module products are to be handled similarly. Therefore the Report Series inventory expands in two directions: (1) publication of new reports and reprints and (2) reproduction of previous papers to fill requests.

The R&D Report Series is distributed to a mailing list of more than 500 names. This list is divided into four sections so that selected mailings are possible. Plans are also underway to establish a large (2000 + names) list to be shared by all the R & D Centers.

A set of brochures are in production to tell the R & D Center story in layman's language and to encourage inquiries about specific reports and products. The brochure production is conducted in coordination with the other R & D Centers about the country with which the Texas Center has joined in a combined communication plan.

Daily work in the Dissemination Office also includes editing of papers written by researchers. Authors are not required to submit their articles for editorial judgment, but they are encouraged to take advantage of an objective editorial eye to check for consistency of style and strong writing. The Dissemination Division benefits by handling these papers also, for a preview of the published works helps to keep the staff informed about what is going on. The dissemination staff also offers assistance in production problems related to the modules: printing, illustrations, photo processing and so forth.

More than 20 letters a month are directed to the Dissemination Office containing requests for papers or general information from the Center. These range from requests for single reprints to the present record holder, an order for copies of 44 different articles and reports. Traffic in this department continues to increase as the Report Series carries word of the Center's work into new areas.

In all of these matters the Dissemination Division is governed by a set of guidelines established in the winter of 1968. Briefly, the guidelines are as follows:

1. All dissemination activites are to be conducted through the facilities of the Dissemination Office. Staff members are not to produce or distribute their own reports without special arrangements with the Dissemination Division.

2. All supplies of reprints, mimeographed papers or other publications concerning R & D activities are to be kept and distributed by the Dissemination Division.

3. The Dissemination Division is to be considered a primary publisher of R & D-generated reports and products through its Report Series.

4. Dissemination materials in such media as videotape and film are to be produced only in close cooperation with the Dissemination Division.

5. The dissemination staff is to implement acceptable publicity to inform the public and the education community of the Center's existence and of the products of its labors. The Center staff is to cooperate in such activities following their approval by the Directors.

6. The Dissemination Division is to establish and maintain contacts with its counterparts in the other R & D Centers for the purpose of cooperative communication efforts.

The program outlined above has set the Center on the road to a strong communications program. There are, however, other aspects to dissemination. The division recently requested a policy decision concerning the role it should play in inter-institutional contacts and implementation of the Center's products in colleges of education. This function still resides in the Administration Division of the Center. The present Dissemination Division staff and organization is best equipped for communications work. Product implementation is a new dimension which the division has yet to develop.

03.01

SCHOOL INPUT

Marshel Ashley

Activities of the school input division revolve chiefly around the continuing task of maintaining the working relationship between the R & D Center and the Austin Independent School District.

In this capacity, the division coordinator serves on the Policy and Planning Board of the Center and is a member of the Executive Committee. Housed in the AISD office building, the coordinator has close contacts with school officials.

The coordinator reviews newly approved project proposals and plans implementation of those project facets which must take place in the schools. He also serves as a consultant to module building groups on request.

Two particular projects have received the attention of this division during the past year. The coordinator has been actively involved in liaison between the ITEC project (03.0203) and AISD. This project involves principal and 30 classroom teachers in six different schools.

The coordinator also acts as a director of the English as a Second Language module building group, a role he assumed because of prior experience with bilingual teaching programs and interest in the Center's activities in the project.

03.02

PERSONALIZATION (CONSULTING)

04.0301

PERSONALIZATION (MODULE BUILDING)

Frances F. Fuller

This chapter reviews the various projects and programs within the R & D Center which precede and are carried forth by several distinct programs on the current Program and Project Register. These several programs are conducted by a common staff, under the supervision and direction of Dr. Fuller.

The currently listed programs of this group are as follows:

03.02	Personalization (Consulting)
.0201	Measuring Teachers' Personal Gain
.0202	Analyzing Teachers' Personal Gain
04.03	Personalization (Module Building)
.0301	Concerns of Teachers

This section reported under the name Assessment and Counseling Division from September 1, 1965, to December 31, 1966, and under the name Individualized Teacher Education Division from January 1, 1967, to December 31, 1967. In the Annual Report dated April 1, 1968, this section reported both as Task Force IV and Personalization Division, and in the Program Plan and Budget Request of November 1, 1968, it appeared as the Preservice Personalization Section of the Personalization Division. This name shall be retained for use here.

This report summarizes the work conducted under the above rubrics from September 1, 1965, to June 30, 1969. It does not include the project Individualized Teaching for Effective Coping (Inservice Personalization Division) nor the Assessment Division.

Focus

The Preservice Personalization Section focuses on the teacher as a person and on that affective gain of teachers and students which is attributable to teaching. Teaching is defined as that behavior of the teacher, in the physical presence of the student, which produces changes in students. Affective gain is generally defined as in Taxonomy of Educational Objectives Handbook II Affective Domain (Krathwohl, Bloom and Masia, 1964). (Constructs from elsewhere are also used of course).

Goals

These goals are stated in the briefest and, therefore, the most general terms.

The overall long-range goal of the Personalization Section, as of the R & D Center generally, is the improvement of teacher education in the United States. The contribution of the Personalization Section to this general goal is the development and adoption of a personalized model for teacher education which will produce the following results:

1. Increased teacher satisfaction with teacher education. Teacher education is widely regarded by undergraduate education majors as irrelevant to their needs. One objective of a personalized program is to identify teachers' perceived needs, and to develop programs which produce teachers who are personally involved in teacher preparation and motivated to teach after graduation.

2. Affective gain for teachers. One expected outcome of a personalized program is self-actualized teachers, teachers who are able to benefit from education, who have a realistic view of their own behavior, who solve their own personal problems that may interfere with pupil learning, who adapt creatively to change, who are expert interactors: specifically teachers who are comfortable, aware, receptive, responsive, imaginative, committed and organized and who produce affective gain in students.

3. Affective gain for students. The ultimate objective of a personalized teacher education program is gain for students. The kind of gain in which this division is interested is affective gain for students: students who are able to benefit from education, who adapt creatively to change, specifically, students who are comfortable, aware, receptive, responsive, imaginative, committed and organized.

4. Adoption by teacher educators of personalized procedures which can be adapted to their individual situations. The personalized model is not only adaptable to different individual teachers but should be adaptable to various teacher education situations. The procedures should be empirically tested and explicitly described. Descriptions of procedures should specify which components of treatments produce effects and which kinds of individuals benefit

from procedures. Such specificity enables teacher educators to select the components to be used by them and the individuals to whom the treatments should be offered.

Following is a survey of the accomplishment toward these goals. First is a brief overall estimate of progress which has been made toward each of the four main goals of this section. Next are listed seventeen steps in our strategy to accomplish these goals. Then are listed separate projects, the status of each project and an historical overview of each project.

Progress Toward the Four Goals

Goal #1 Development of a Teacher Education Model Which Can Produce Increased Satisfaction With Teacher Education

One model for achieving this goal has been developed and tested.

An extensive search of the literature on teacher-perceived concerns and satisfactions disclosed a research convergence. We conceptualized this convergence as a three stage model of (1) preteaching unconcern, (2) early teaching concern with self, and (3) late teaching concern with student gain. Two studies were completed and the data of other investigators reanalyzed, all supporting the model. The studies, the reanalyses and the model have been reported in the *American Educational Research Journal* (Fuller, 1969A).

A principle postulate has been tested and supported: that teacher satisfaction with professional courses is greater when course content is consonant with self-perceived needs of prospective teachers (Patterson, 1969).

A manual for scoring concerns of prospective teachers is almost completed. A quick-scoring instrument has been developed for prospective teachers (Patterson, 1969).

It is now possible for a teacher educator to assess the concerns of his education students, and to increase student satisfaction with a course by selecting content and procedures consonant with students' assessed concerns.

Some materials have been developed. These materials can be used by teacher educators to guide them in selecting materials consonant with student concerns and will be included in ERIC Review of Research in Education. These are a booklet, "Climates for Growth," (circulation 18,920) published by the Hogg Foundation for Mental Health, and distributed nationally (Appendix D); a chapter in the 1967 Yearbook of the Association for Student Teaching, reprints of which have been distributed widely; "Concerns of Teachers: A Developmental Conceptualization", reprints of which have been distributed nationally, and a filmstrip entitled "Meet Your Cooperating Teacher". An Instructors' Manual to accompany this filmstrip is in preparation.

An article, suggested by the reviewers of the American Educational Research Journal, on further application to teacher education of the concerns model, is being prepared for the Journal of Teacher Education.

When this JTE article has been completed, a package can be assembled and sent to teacher educators which will include (1) the concerns model, the research supporting it and a suggestion that content and procedures for education courses be selected to meet teachers' concerns; (2) directions for assessing concerns of education students; (3) procedures to implement the model such as early brief teaching, selecting course content by concerns and other procedures.

Some adoption of this model has occurred even though materials are not complete. The model has been used by the McRel Regional Lab and by all self-paced instruction sections of educational psychology for secondary undergraduates at The University of Texas. It also furnishes a part of the conceptual base of the Science Education Center of The University of Texas.

No progress has been made in one important area. Greater demands have been made for materials about this model than we have been able to meet. Most pressing are demands for textbooks with content ordered by teacher concern stages. The Personalization Division does not anticipate being able to write such textbooks and suggests priority be given to encouraging publishers to stimulate the writing of such texts.

Other accomplishments towards the goal of increased teacher satisfaction with professional teacher education are being reported by the Assessment Division (03.03).

Goal #2 Development of Teacher Education Procedures Which Can Produce Affective Gain for Teachers

Considerable progress in both procedures and in measures of gain has been made toward the accomplishment of this goal.

Development of Procedures for Teacher Education

Nineteen procedures are in various stages of development and description. Four have been tested and found to produce affective gain for teachers. Two are now being tested and 13 new procedures are in various stages of development.[1]

Tested Procedures

Psychological feedback, behavior feedback, situation feedback: A five-year research effort, the Personality, Teacher Education and Teaching Behavior Research Project formally tested effects on teacher personality and teaching behavior of three procedures. These procedures were (1) psychological feedback (assessment of teachers from psychological instruments and psychological counseling); (2) behavior feedback (the use of a teacher's viewing her own teaching film as a stimulus for counseling); (3) situation feedback (special placement in a teaching situation calculated to facilitate affective gain and/or feedback about aspects of the teaching situation uniquely impactful on the teacher, to facilitate affective gain).

Changes associated with these treatments were all in directions generally conceded to constitute gain. Teachers became more receptive to feedback from pupils, more interesting in their teaching, more imaginative, and more organized and there was some tendency for teachers to make wiser decisions about teaching as a career (Fuller, Peck, Bown, Menaker and Veldman, 1969). Persistence of these changes after graduation is being assessed by telephone interview.

Instruments to assess personality changes were developed by the Assessment Division; instruments to measure teaching behavior change were developed by the Personalization Section; the final report was written jointly.

Reports of this research have appeared in the Proceedings of the American Psychological Association (Fuller, Peck et al, 1967) and the final report has been distributed. One summary article is in preparation for publication.

These procedures, which were tested in middle-class elementary schools, have been extended to secondary schools (Porter Project), lower-class elementary schools (Metz and Zavala Projects), to gifted teachers (Highland Park Honors Program) and to inservice teachers (Summer Educators' Clinic, Porter Project and Highland Park).

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[1] Tested treatments: psychological feedback, behavior feedback, situation feedback and early teaching; treatments being tested: motivating strategies module; Meet Your Cooperating Teacher module. The 13 new procedures are listed below under "Projects."

Early teaching. The concerns model predicts that actual teaching will arouse teaching concerns and interest in professional education. These predictions were supported (Newlove, 1969) and procedures developed which make feasible incorporation of this treatment into almost any teacher preparation program.

Procedures Being Tested

Meet Your Cooperating Teacher. One common hang-up of new teachers is concern about variation in first teaching situations: in responsibilities given, expectations, etc. A filmstrip "Meet Your Cooperating Teacher" which purports to resolve this concern has been produced and is being tested.

Motivating strategies module. New teachers are concerned about getting the attention and interest of students. This series of video tapes purports to resolve this concern and is being tested.

New Procedures

Thirteen procedures to increase teacher affective gain are in various stages of development, some only dimly conceptualized, others well developed but not yet tested.

Development of Measures of Affective Gain

Improved instruments have been developed to measure affective gain in teaching behavior of teachers.

The FAIR System. A search of the literature disclosed a convergence in research and theory on the structure of interpersonal behavior (Wiggins, 1968). This structure has been used as the basis for an integrated system for observing and categorizing video tapes of teaching behavior (Fuller, 1969b). Satisfactory interjudge consensus has been achieved. A description of the electronic and mechanical equipment used has appeared in the Classroom Interaction Newsletter (Fuller and Melcer, 1968) and the manual will be included in Mirrors for Behavior, second edition. This system includes four observation schedules (two category and two rating schedules) and equipment to facilitate observation. The Assessment Division is using the system to code video tapes.

Summary

Procedures have been developed which increase affective gains of teachers. These gains can be assessed as they evidence themselves both in personality instruments and in teaching behavior. These procedures have been tried with new populations of teachers. New procedures to further amplify these gains are being developed.

Other accomplishments toward the achievement of Goal #2 are included in the report of the Assessment Division.

Goal #3 Development of Teacher Education Procedures Which Can Produce Affective Gains for Pupils

Three objectives have been accomplished.

First, pupil and teacher affective behavior in video tapes can now be described on similar dimensions, dimensions which represent a research convergence on the structure of interpersonal behavior generally (Wiggins, 1968).

Second, satisfactory interjudge consensus has been achieved on all but rare pupil behaviors. Statistical procedures were developed by Dr. Shirley Menaker of the Assessment Division.

Third, and most important, evidence has been found that the affect of pupil responses is influenced by the nature of the affect of the teachers' immediately preceding behavior. Interestingly, teachers are similarly influenced by preceding pupil behavior. When both pupil and teacher behaviors are grouped into warm, neutral and cold, the most probable behavior of both teachers and pupils is behavior which is similar to behavior of the other which preceded it (Fuller and White, 1967).

This discovery of a possible affective symbiosis in the classroom increases the importance and urgency of attempts to develop treatments to bring about affective gain for teachers.

This research on affective symbiosis of teachers and pupils was derived from sequences of FAIR 13 categories, a category system we now consider primitive. The new FAIR 33 represents both teachers and pupils on similar dimensions. Consequently it is expected that this symbiosis will be better described as soon as FAIR 33 category sequences can be analyzed.

A thesis was completed, entitled "Predicting Pupil Enthusiasm from Adult Ratings of Teacher Warmth and Pupil Ratings of Friendliness" by Jane O'Brien under the supervision of Frances Fuller.

The Assessment Division is relating pupil opinions (POSR) to teacher characteristics.

Goal #4 Adoption, Adaptation and Further Development of the Personalization Model and Procedures by Teacher Educators

Personalization models and procedures are being explicitly described. However, we do not desire the adoption of these procedures without revision. Our goal is the adoption by teacher educators of a personalization viewpoint, the incorporation into teacher education of a consideration of the concerns, perceptions and affective development of teachers. A personalized program is, by definition, different for each person and each institution depending upon the characteristics each brings to the situation. Consequently, the general goal for teacher educators is that the model be adopted but that the procedures be adapted on the basis of local research and development.

Accomplishments to further Goal #4 have been described in each of the previous sections: articles, manuals, etc. This has been our main thrust. In addition, materials are being prepared for teacher educators.

In order to make both adoption and adaptation possible, these materials for teacher educators must have two characteristics:

1. Procedures and effects of procedures as they occurred at The University of Texas should be specified precisely.

2. The components of the treatments that produced effects--the kinds of individuals who benefited most and the conditions under which the components work for these individuals--must be specified so that other institutions can determine whether it is possible for them to supply necessary components, whether they service individuals who can benefit and whether the conditions under which they operate permit the treatments to be effective.

Considerable progress has been made toward describing and specifying the components of these procedures:

1. Psychological feedback (counseling module): The Assessment Division has completed most work on specifying how counselors can use psychological instruments to assess teacher personality and to ready themselves for psychological feedback sessions. This work is included in the report of the Assessment Division.

2. Behavior feedback (teachers view their own films):
   a) Coding systems have been developed for quantifying the audio recordings made when teachers saw themselves on film.
   b) All treatment records have been coded, keypunched and summarized into relevant constructs.
   c) Treated individuals who improved and who did not improve have been identified in preparation for specifying:
      (1) What components of treatment worked best and
      (2) What kind of individuals benefited from which treatments
   d) An article is in preparation describing convergences in the literature about self-confrontation (as in behavior feedback, seeing a film of one's self teaching), and describing the procedures and the effects of behavior feedback on teachers.

Summary of Progress Toward Goals

Considerable headway has been made towards accomplishing goals one, two and four, and some progress has been made toward accomplishing goal three.

Procedures: General Strategy

The general strategy is to:

1. Develop procedures to produce affective gain for teachers.

2. Test those procedures for effects.

3. Identify the components of the procedures which produced the effects.

4. Describe the types of individuals most likely to benefit from the procedures. (This step is primarily the responsibility of the Assessment Division).

5. Arouse interest among teacher educators in adapting the procedures to their special populations and situations.

Obviously, this strategy involves many intermediate steps. Below the intermediate steps of this strategy are listed first.

Next, all the subprojects which have been undertaken are listed showing at what step each project fits into the overall strategy, the history of the project and its current status.

Intermediate Steps[2]

I. Identify prospective teachers' felt needs.
  A. Search the literature for convergences on needs.
  B. Think-tank
  C. Postulate a model
  D. Write proposal
  E. Pilot test postulates
  F. Secure preliminary or face validity data
  G. Decide: go - no go; who will implement

II. Develop procedures to meet needs in I above.
  A. Search literature for convergences on treatments
  B. Think-tank
  C. Preliminary description of procedures
  D. Write proposal
  E. Train personnel to implement procedures
  F. Pilot procedures
  G. Secure feedback
  H. Revise procedures
  I. Decide: go - no go

III. Test procedures using existing criteria.
  A. Proposal
  B. Implement proposal[3]
  C. Observe unexpected phenomena

[2] In addition to procedures specified, the following are routinely done: data are checked; data books, card files and locked raw data files are maintained; mimeographed research reports are written for limited circulation at any step; papers may be delivered to professional associations and mailed out on request. Consulting services are given, theses and dissertations supervised and quarterly and annual reports and proposals written.

[3] Proposal implementation involves selecting personnel to implement, selecting subject sample, university coordination, coordination with public school, following proposal procedure, analyzing data and describing results.

IV. Develop new criteria to assess emerging effects.
  - A. Search for research convergences on effects
  - B. Think-tank
  - C. Write preliminary manual for new instrument or system
  - D. Pilot test instruments or scoring manual
  - E. Achieve interjudge consensus
  - F. Final manual writing
  - G. Use the instrument or system to analyze data in III above

V. Assess effects of procedures (This step is the joint responsibility of the Assessment Division and Pre-service Personalization Division.)

VI. Write formal report on effects of treatments.

VII. Administer treatments in new situations (to discover whether the effects previously found hold up in the new situation or are washed out).

VIII. Discover which components of the procedures produced the effects
  - A. Measure individual gain
    - (1) Clinically assess globally individual change from all available information on each subject.
    - (2) Develop measures of individual gain (personality and behavior).
    - (3) Analyze individual records using gain measures.
    - (4) Summarize gain measures for each individual (post data) e.g. make summary record of all measures for each individual.
  - B. Identify "good" and "bad" on various measures (post data)
  - C. Identify "improved" and "unimproved" individuals (pre-post change)
  - D. Identify important components of treatments
    - (1) Search literature for convergences on structure of treatment
    - (2) Inductively determine existence in treatment records of
      - (a) Convergence components
      - (b) Idiosyncratic components
    - (3) Develop coding systems for quantifying treatment records
    - (4) Train judges to use coding systems
    - (5) Achieve satisfactory interjudge agreement
    - (6) Code treatment records
    - (7) Summarize codes to form treatment component constructs
  - E. Relate gain to components (What treatment components did the "good" and the "improved" subjects more often have? What treatment components did the "bad" and the "unimproved" subjects more often have?)

F. Describe relationships between individual gain and treatment components
G. Assemble and write up case studies illustrating relationships

IX. Discover what kinds of individuals are likely to benefit from what treatments.
A. Search literature for convergences on characteristics of subjects likely to benefit from treatment
B. Consult with Assessment Division on available measures of relevant dimensions of individual improvement from IX A above
C. Identify for Assessment Division subjects who improved on various dimensions (from VIII C above)
D. Consult with Assessment Division on identification of types of individuals likely to benefit from treatment (Assessment Division has primary responsibility for further steps)

X. Select from treatment records illustrations of effective components.

XI. Select from individual records and treatment records illustrations of individuals who benefited from various treatments and treatment components.

XII. Write illustrative case studies if appropriate.

XIII. Collate materials and assemble into form usable to teacher educators.

XIV. Develop evaluation instruments for the total package (Assessment Division has primary responsibility for assisting with this instrument development).

XV. Arouse interest of teacher educators in procedures.
A. Write articles about procedures in journals, etc. read by teacher educators
B. Write manuals and develop illustrative material to describe procedures.
C. Provide consultant service to assist teacher educators to adapt procedures to their populations and situations.

XVI. Field test procedures.

XVII. Revise tested procedures, describe new needs, develop new procedures etc.

Repeat the 16 steps above, beginning with identification of new needs of teacher educators, of prospective teachers, and of institutions, which emerge during field testing; develop new procedures to meet these new needs; test the new procedures, and so on.

One project (development of the concerns model) is in Step XV as of summer 1969. Two projects (psychological assessment and film feedback treatment) are at step VIII. Others are at earlier steps.

Projects of the Division

The overall goal of the Personalization Division, as stated earlier, is improvement of teacher education in the United States through

1) development of personalized teacher education models and procedures which will produce affective gain (motivation, attitudes and feelings) for teachers and students, and

2) adoption and adaptation by teacher educators of these procedures.

In the sections below, projects to accomplish these goals will be listed in two groups. First, projects will be listed which contribute to the goal of program development: formulating, testing and revising procedures. Second, projects will be listed which contribute to the goal of dissemination: identifying effective components of procedures and identifying individuals who benefit from procedures; collating materials, writing, field testing and consulting with users. This is a rough division. Projects overlap and many contribute to both goals, but each will be described only once according to its principal purpose.

Each project will be described briefly to indicate how it contributes to the goal. This will be followed by a brief history of each project, its current status and, where this is appropriate, what step it represents in the overall strategy.

Projects Contributing to Program Development

1. Personality, teacher education and teaching behavior research project analyses and report writing

This research project (1962 - 1966) tested the effects of three personalized treatments on teacher personality and teaching behavior. The Preservice Personalization Division was responsible for coordinating data analyses, collating and writing final report. Many of the procedures described in this report were derived from this project.

This project represents steps I, II, III, IV, V and VI of our strategy.

1962-65 Proposal implementation, data-gathering

1965-66 Data inventory, set up data decks, data books
Began development of behavior criteria (systems for categorizing films)
Began development of mechanical equipment for coding 8mm films
Began development of systems to code exit interviews
Paper for the International Congress of Psychology written
Two papers for 1966 Proceedings of American Psychological Association written

1966-67 Elementary 8mm PEB films were coded (N=175)
Telephone followup interview procedures developed
Preliminary reports on elementary PEB subjects written

1967-68 Data analysis and interpretation in coordination with Research Methodology Division
Writing the basic PEB document

1968-69 Rewriting and editing of final report
Submission of completed final report (April, 1969)

2. Extensions of PEB Personalization Treatments to New Populations. These projects represent step VII.

A. Extension of Treatments to Culturally Deprived Pupil Populations

1) Metz Pilot Project

1965-66 Twenty-four juniors were assigned to Metz school to teach, received psychological feedback, film feedback and situation feedback.

A study of pupil-teacher social class interaction was completed as a master's thesis and an APA paper (Jackson and Fuller, 1966).

An attempt was made to adapt Veldman's Pupil Observation Survey Report to Spanish-speaking children by various means, including translating it into Spanish and administering the instrument in Spanish by means of a film strip. Children were still not able to respond to the instructions. Attempt to develop such a version of the POSR was abandoned.

1967-68 Video tapes of classes at Metz were coded using the FAIR 33 system.

1968-69 Master's thesis was completed by Gail Brown under the supervision of Dr. Menaker of the Assessment Division, a comparison of behaviors of teachers in middle class and lower class school populations. Results of this study are reported by the Assessment Division.

Further analyses are awaiting the delivery of equipment and the resolution of problems with processing punched paper tapes in the Data Processing Section of the Assessment Division.

2) Zavala Project

1966-67 Twenty-four junior teachers were assigned to Zavala and received psychological feedback, film feedback, situation feedback, and interaction analysis training. Test interpretations were given to 18 cooperating teachers with followup counseling.

1968-69 Video tapes of classes were coded.
Analysis of data is awaiting resolution of problems in the Data Processing Division.
Additional analyses were planned by Dr. Donald Melcer to describe children in this population, but the analyses were not performed as the investigator left the Center in 1968.

B. Extension of PEB Personalized Treatments to Secondary Pupil Populations

1) Porter Project

1965-66 Planning and proposal writing

1966-67 Phase 1, junior year: 24 experimentals and 24 controls subjects took pretests. Experimental subjects had psychological feedback, film feedback, counseling and special placement. Counseling and film feedback was also extended to inservice teachers.

1967-68 Phase 2: senior year. Data gathering was completed.

1968-69 Analysis was begun by the Assessment Division.

C. Extension of PEB Treatments to Gifted Teacher Candidates

1) Highland Park Honors Program

1965-66 Program planning proposal writing.

1966-67 Six out-of-school mature superior women and six superior undergraduate candidates were selected. They pursued a special program including psychological feedback, counseling, film feedback, interaction analysis training, pupil observation feedback, and computer assisted-instruction listening and responding training. In addition, inservice teachers at the school received test interpretations, were video taped and received other personalized services. All data planned were collected.

1968-69 Video tapes coded

D. Extension of Personalized Treatments to Inservice Teachers

1) Educators' Clinic

During the summer of 1966, a clinic was conducted for six inservice teachers, two from each of the three participating schools (Zavala, Porter, Highland Park). These teachers received intensive six-week feedback including psychological feedback, video-tape feedback and training in interaction analysis.

Although the teachers themselves were enthusiastic about their experience, it was the clinical impression of the professional staff that those who benefited most were teachers who were young and already predisposed to benefit from feedback. Analysis of these data and attempts to extend feedback to mature teachers were reassigned a lower priority since it seemed probable that the payoff would be greater through treatment of preservice teacher populations rather than by further work with inservice teachers.

E. Extension of PEB Treatments to College Faculty

1966 At the suggestion of the Dean of the College of Engineering, and the Dean of the College of Education, a joint proposal was made to The University of Texas Excellence Fund to show to faculty in the two colleges video tapes of their own teaching as done in the PEB study (Fuller and Morgan, Pilot Proposal for Teaching in the College of Education and the College of Engineering, 1966). This proposal was rejected by The University of Texas Excellence Fund Committee. However, this effort has since been implemented in part by the College of Engineering by the purchase of video-tape equipment and through consultation.

3. Development of Personalization Procedures

A. Investigation of Teacher Concerns (Step I of our strategy)

1961-65	Group counseling sessions for student teachers were conducted in 1961 and 1962. Typescripts of these sessions were categorized. Concerns stages were identified. The literature on teacher concerns was reviewed and a three stage developmental model of teacher concerns was posited. Two studies were done to test hypotheses generated by the concerns model.
1966	Chapter written for 1967 Yearbook of Association for Student Teaching (Fuller, Pilgrim and Freeland, 1967).
1967-68	The data of other investigators were reanalyzed. Article was written positing three stages of concerns: pre-teaching non-concern; early teaching concern with self; later teaching concern with task.
1969	"Concerns of Teachers: A Developmental Conceptualization" was published in the American Educational Research Journal (Fuller, 1969).

B. Development of Specific Treatments

1) Psychological Feedback: A psychologist reviews the teacher's psychological test battery and uses this assessment to ready himself for a counseling session with the teacher.

2) Behavior Feedback: The teacher sees a recording on video tape of herself teaching. This self-confrontation is used by the psychologist as a stimulus for counseling and behavior change.

3) Situation Feedback: The teacher is placed in a special student-teaching situation selected to facilitate her development or, if special placement is not possible, the teacher is given a feedback about psychological aspects of the student teaching situation which has special relevance to her needs.

The effects of the above three treatments are described in the final report of the Personality, Teacher Education and Teaching Behavior Research Project (Fuller, Peck, Bown, Menaker, White and Veldman, 1969).

4) The Fifteen Minute Hour (Early Involvement in Teaching Project)

1965-66	A pilot study of the effects of brief early teaching concluded that it was enthusiastically received by education students, school staff and pupils. This is step II of our strategy.
1966-67	Twenty-four undergraduate secondary education students each taught 15 minutes at Porter Junior High School, were videotaped, had psychological feedback, and film feedback, and interaction analysis training. This is steps III and V of our strategy.
1969	Wrote first draft of paper describing procedures and effects of early teaching. (Newlove, 1969). This is step VI of our strategy.

5) Motivating Strategies: One concern of teachers is attracting the interest of students. Motivating Strategies Module is a series of video tapes illustrating various motivating strategies. The progress made on this treatment is described in the next section under motivating strategies module.

6) "Meet Your Cooperating Teacher": This is a filmstrip designed to resolve concerns about variations in the student teaching situation. Progress is described in the next section under modules.

7) Interaction Analysis Feedback: The teacher is given information about her interaction with the children based upon code frequencies, sequences and matrices.

8) POSR Feedback: A counselor interprets to the teacher the Pupil Observation Survey Report evaluations by her pupils of her.

9) Neighborhood Teacherages: Teachers live for six weeks in the neighborhood of a poor district school while teaching in that school.

10) Constant Role Video Tape: Child actors would be used to portray typical elementary school pupils (the hostile child, the dependent child, etc.) in ways which would elicit emotional interactions from new teachers. These video tapes would be used to desensitize teachers, when necessary, to such pupils before entering the classroom.

11) Peer Group Feedback: Groups of prospective teachers show video tapes of their own teaching to each other in counseling or in seminars.

12) Peer Interaction Analysis Feedback: Teachers categorize one another's teaching live in the classroom using a tape recorder or categorize teaching on film or video tape and give one another feedback.

13) Fantasy Teaching: Teachers imagine various eventualities in the classroom and their responses to these situations.

14) Role Playing: In groups some teachers play roles of children and other teachers play role of teachers.

15) Pupil Stimulated Recall Feedback: Pupils see video tapes of themselves and their student teacher and recall in audio-recorded discussion their recollections of their thoughts during the teaching. This video tape and the audio recording of the pupil stimulated recall is provided to the teacher alone or in her counseling group.

16) Instantaneous Feedback While Teaching: A clock array consists of ten clocks and ten keys. A coder hits a key and holds it down while the behavior continues. Each clock records the number of seconds the teacher and pupils devote to each of the ten categories of the Flanders Interaction Analysis System. For example, if the teacher lectures all the time, the only clock which will record will be the L clock. The clock array faces the teacher who can see continuously how much time she devotes to different behaviors and how much time the class devotes to different behaviors. (A clock array has been built). A further development possible would be a visual radar type screen presentation which would sum categories so that tones of gray or various colors could indicate dimensions of classroom interaction, e.g. warm colors for positive interactions, dark colors for negative interactions.

17) Student Observation Report: This would be an opinion questionnaire which student teachers would fill out about their supervisors similar to Pupil Observation Survey Report.

18) Teachmobile: This is contemplated as a Volksbus with video tape equipment which could go with a counselor (for example, to rural areas of Texas) to video tape preservice teachers and to extend treatments to inservice teachers in remote areas where student teachers are assigned and where the quality of teaching supervision is unknown.

19) Teacher Placement Film: Each prospective teacher includes a sound film of herself teaching with her placement file so that school officials hiring teachers can consider the teachers' actual teaching style in their preselection of teachers to be interviewed.

4. Development of Systems for Describing Teaching Behavior (This is step IV of our strategy).

A. Observation Schedules

1965-66	Literature review on interaction analysis systems Development of Early version of Filmed Interaction Analysis Category System Development of the video van
1966-67	Development and Construction of coding desk, shadow box, tally fan Achievement of satisfactory interjudge consensus of FAIR 13
1967-68	Development of system for categorizing pupil classroom behavior (FAIR 33) Development of electronic equipment to facilitate coding (Flexowriter)
1968-69	Publication of article "Mechanical and Electronic Equipment to Facilitate Behavior Description" in December, 1968 issue of the Classroom Interaction Newsletter. Publication of Research Methodology Monograph #6, "Fuller Affective Interaction Records System: A Manual for Describing the Frequency, Duration, Sequence and Context of Verbal and Non-verbal Pupil and Teacher Interpersonal Classroom Behavior." This manual includes two category schedules with interjudge consensus information, three rating systems and descriptions of the mechanical and electronic equipment with drawings and diagrams. The manual will appear in Mirrors for Behavior, second edition (in press).

B. Telephone Followup Interviews

To provide longitudinal information about teachers who received personalized treatments, a telephone interview procedure was devised and all available PEB subjects have been interviewed by telephone during their second and fourth years after certification.

1966-67	Development of coding systems for exit interviews and telephone followup interviews.

Projects Contributing to Program Adoption

These projects represent steps VIII, X, XI and XV

Concerns Model

1962-68 As indicated in Section 1, teacher concerns were conceptualized as a developmental sequence (Fuller, 1969).

1969 Most work has been completed on a manual for scoring concerns (RMM #7). This will enable teacher educators to discover what concerns their education students have.

Some backup research has been completed for an article describing applications to teacher education of the concerns model. (This article is behind schedule because of reduced budget and consequent reduced faculty time during spring, 1969).

Cooperating Teacher Module: Meet Your Cooperating Teacher

The purpose of this module is to resolve student teachers' concern about variations in the student teaching situation (opportunities to teach, requirements, etc.).

1968-69 A script was written, a color slide series developed and the slide presentation pilot tested. An instructor's manual is being written.

Counseling Module

1968-69 The first half of this module is a manual for instructing counseling psychologists to assess psychological instruments and to ready themselves for psychological feedback conferences with prospective teachers. This module is included in the Assessment Division report.

Measuring Individual Teachers Gain

The purpose of this effort is to identify subjects who improved and who did not improve to discover (1) which components of treatments worked and (2) which individual subjects benefited from treatments.

1962-66 Data gathered under PEB project.

1966-68 Gain measures developed.

1968-69 Improved and unimproved subjects being identified.

The identification of subjects who improved and who did not improve is nearly accomplished. An individual gain graph has been prepared for each PEB elementary subject who received personalization treatments. The gain graph shows each subject's pre and post rank on the following measures:

Psychologists' ratings
Supervisor's rating
Film rater ratings
Peer group ratings
Self evaluation
Self-reported benefit of treatments
Pupil approval on POSR
Pupil responsiveness in classroom behavior
Teaching status one year after graduation
Clinical write up ratings of psychological change and resolution of personal problems.

Some measures to have been developed about the end of 1969 have been abandoned to expedite identification of effective components of treatments by fall 1969 if possible. Identification of improved and unimproved subjects using only the readily available measures is underway.

Film Feedback Module

A prospective teacher teaches briefly and is video taped. After a psychological assessment feedback session with a counselor, she sees her video tape with this same counselor. The video tape is used as a stimulus for counseling and encouragement of behavior change.

1961	The College of Education provided funds to Dr. Benjamin Holland and Frances Fuller for 8mm camera equipment and film. Dr. Holland took color films of six student teachers teaching small pupil groups. Color film was abandoned because of strong distracting light necessary for color.
1962	Volunteer student teachers filmed in black and white at Highland Park Elementary School teaching whole classes in the spring. Procedures and technical problems worked out.
1962-65	Filming substituted for the audio taping for PEB subjects. Filming at Highland Park and Casis Elementary schools at beginning of junior year and end of senior year teaching for elementary subjects. Secondary juniors filmed in University classes pre; in student teaching classrooms post.

	Secondary teachers see pre films with counselor Elementary teachers see pre and post films with counselors Audio tape recordings made of all film feedback sessions Exit interviews, post testing
1966-68	Effects of treatments on groups assessed.
1967-68	Coding systems developed to quantify audio recordings of film feedback sessions of elementary PEB subjects.
1968	A master thesis completed: "Counseling and Self Ideal Discrepancy: Effects of Counseling, Filmed Behavior Feedback and the Teaching Situation on Self and Ideal-Self Discrepancies of Prospective Teachers" by Ilse Dorothy Albrecht, supervised by Frances Fuller.
1969	Effects of film feedback written up in final report of 1962-66 research project (Fuller, Peck, Bown et al, 1969) Improved and unimproved subjects identified A coding system was devised to assess stress experienced by teachers during filming Analysis begun to determine what components of film feedback treatment produced effects Analysis begun to determine what types of individuals are most likely to benefit from film feedback A description of the task of the recorder was written Case studies to be used for illustration chosen Typescripts of teaching and film feedback sessions made Collation of all material Historical review of all literature on self-confrontation underway in preparation for writing article on film feedback

Motivating Strategies Module

This module is a sequence of video tapes illustrating various motivating strategies. Work during 1968-69 has centered upon the development and evaluation of the video tape module.

From an initial set of tapes, obtained from several research projects utilizing video tapes made in the schools, a smaller sample of approximately 70 was selected on the basis of supervisor or rater recommendations. A final selection of five video tape segments was made so that a variety of motivating strategies would be illustrated. Materials were prepared describing the taped lessons and which called attention to the strategies used in each episode. The module thus consisted of a series of video tapes, with the accompanying descriptive booklet.

Evaluation of the module was conducted with 110 undergraduates in educational psychology. One group of students viewed the video tapes and then taught a lesson, while a control group did not view the tapes. Criterion measures were ratings of effectiveness in use of motivating strategies and types of strategies used.

As of June 30, 1969, most analyses have been completed and the report of the module evaluation is being prepared.

School Environment Mapping Module

This module, tentatively proposed in the Annual Report of April 1, 1968, will not be begun. (Dr. Michael Thomas of Educational Administration has undertaken a module with a similar purpose, 04.0102).

Professional Course Content Module

The purpose of this module is to suggest to teacher educators how they can select for their courses content which is consonant with teachers' concerns. This information will be included in the article now in preparation about applications of the concerns model. This will not be a separate module.

Books in Preparation

In addition to the publications described above, two books have been proposed in which members of the Preservice Personalization Division were to have participated.

1. Personalizing Undergraduate Teacher Education by Robert Peck, Frances Fuller and Shirley Menaker. The Personality Teacher Education and Teaching Behavior Project final report is the basic data for this book which will be an adaptation of this report for a general audience. Dr. Robert Peck has committed himself to adapt this report for this book. The work of the Preservice Personalization Division on this book was completed with completion of the research project final report.

2. Elementary Teachers as Persons by Frances Fuller and Shirley Menaker. As stated in our Progress Review covering the period April 1, 1968, to February 1, 1969, material originally thought of as a book, Elementary Teachers as Persons, will instead be embodied in manuals and articles.

A Concise Chronology of the Division

1965-66	Assessment and Counseling Division, Research and Development Center for Teacher Education. Organization of the division including ordering equipment, hiring personnel, etc.

Straightening out PEB data, setting up data decks, data books inventory, etc.
Began development of behavior coding systems: review of interaction analysis literature, development of FAIR 13 and of Teacher Assessment Form.
Began development of mechanical coding equipment.
Trained coders to code PEB film data.
Development of the video van.
Introduction of videotaping into new schools.
Pilot testing of "15 Minute Hour" (early teaching).
Implementation of Metz Project. (Teacher personalization in a culturally deprived pupil population).
Proposal to extend PEB treatments to College of Education and College of Engineering written and rejected
Wrote chapter "Intensive Individualization of Teacher Preparation" for 1967 Yearbook of the Association for Student Teaching.

1966-67 Individualized Teacher Education Division, R & D Center.
Conducted Summer Educators' Clinic for inservice teachers.
Wrote script and produced videotape for Southern Regional Education Board.
Wrote paper for XVIII Congress of International Psychology on interaction analysis coding equipment.
Coding begun of PEB 8mm sound films
Paper on influence of social class of teachers and pupils on pupil opinions of teachers was published in 1966 Proceedings of the American Psychological Association.
Article on exit interviews was published in 1966 Proceedings of the American Psychological Association.
"Climates for Growth" was written.
Highland Park Honors Program begun and completed.
First year of Porter project completed.
Preliminary report of the analysis of the PEB data circulated.
Telephone followup interview procedures developed and pilot tested.
Coding and punching of PEB Self-Evaluation Form data completed.
Biographical information form indexes devised.
Exit interview reanalysis completed.
Flexowriter behavior coding equipment development begun.
Clinical assessments of individual psychological change of PEB subjects were completed.

1967-68 Division was renamed and divided into Task Force IV and the Personalization Division.
Paper on effects of PEB treatment published in 1967 Proceedings of the American Psychological Association.
PEB analysis of secondary subjects completed.

Porter Project second year data completed and treatments administered.
Analyses planned for discovering what components of treatments produce effects and which individuals benefited from treatments.
Systems for coding film feedback audio recordings were developed.
Systems for coding recorders' notes, counseling case notes, and other records were developed.
FAIR 33, a system for categorizing similarly pupil affective behavior and teacher affective behavior was developed.
The first draft of the final report of the Personality Teacher Education and Teaching Behavior Research Project was completed.
Supplementary systems for categorizing classroom behavior were developed: Classroom Behavior Form, Participation Form, and Time Use Form.
Clinical assessments of individual psychological change were completed on all PEB subjects.

1968-69 Preservice Personalization Section. Task Force IV was disbanded. A new section was formed, the Inservice Personalization Section. This division become the Preservice Personalization Section of the Personalization Division.

Our first priority for 1968-69 was rewriting and production of the final report of the Personality, Teacher Education and Teaching Behavior Research Project. For this reason, and also because of a shift of center resources to the Inservice Personalization Section and to content-oriented module building, recent efforts of this division have been devoted only to tasks which can be completed most economically.

Article on concerns of teachers was written and accepted by American Educational Research Journal.
Classroom Interaction Newsletter Article on FAIR systems equipment was accepted and published.
Research Methodology Memorandum #6 describing the FAIR system was published.
The final report of the Personality Teacher Education and Teaching Behavior Research Project was completed and accepted by the U. S. Office of Education.
Individual gain measures were developed and subjects' individual gain graphs were completed so that individuals who improved on various criteria could be identified.

Review of the literature on film feedback begun.
Description of film feedback in terms of coded components of audio recordings of film feedback sessions was begun.
The manual for teaching counseling psychologists to interpret psychological assessment instruments in preparation for psychological feedback with teachers is nearing completion (Assessment Division).
Manual for Scoring Concerns from Narrative Statements is nearing completion.
Article, "Early Teaching Experience: The 15-Minute Hour" is nearing completion.
Video "Meet Your Cooperating Teacher" was completed, tested and redone as a slide production.
Audiences were surveyed for reactions.
Filmstrip was revised, retested and retained.
Accompanying Instructor's Manual has been begun.
First and second drafts have been written of video tape script describing work of this division.

This history does not include routine activities (e.g. report and proposal writing, administration, etc) or the activities which were a necessary part of those reported here.

Services Within and Outside the Center

The time spent by professional staff in this division in work with other divisions has increased enormously. Most such work has been informal: giving and receiving comments on ideas, plans and written drafts; as review editor for Journal of Educational Psychology, Journal of Contemporary Psychology; as contributor of chapters or quoted material (Research in Counseling, Litwak, et al, 1968, Readings in Counseling Psychology, Volume 3, Ito, 1968; Teachers for the Real World, B. O. Smith, 1969); as Task Force "input", as guest in graduate seminars; in circulating and clarifying our published papers, etc.

One result is that the Math-Science Education Module Building group (04.0201) has moved towards a personalization orientation of content and procedures. For example, the perceived concerns of teachers now constitute a dimension in the Math-Science Education group's model.

The Assessment Division also works closely with the Personalization Division, so closely that some projects have to be reported jointly, for example, counseling module development.

In addition to informal services, a number of formal services have been rendered.

1967-68	Dr. David Butts and Frances Fuller coordinated the teaching of two junior level education courses. Frances Fuller and Linda Schmidt met weekly with the Science Education team.
1968	Beulah Newlove gave psychological assessment feedback to doctoral interns in the office of the Dean of the College of Education to help prepare them to do psychological assessment for undergraduate teachers using similar instruments as a part of her consultation activities for the Office of the Dean of the College of Education.
	Frances Fuller met weekly with the Science Math Module Building group as personalization input person.
1968-69	Beulah Newlove was the psychologist member of the Science Education team, met at least weekly with Science Education faculty and taught members of the team to do test interpretations for undergraduate teachers, film feedback conferences and "15-Minute Hour" procedures.
	Beulah Newlove conferred with the faculty in the Departments of Educational Psychology and Business Administration and the College of Fine Arts, and with school principals, supervisors and teachers at public schools, regarding the work of the Personalization Division and, in many cases, familiarized them with the personalization viewpoint and with procedures which they could use in their own organization.
	Frances Fuller acted as consultant and/or speaker for Southwest Texas Regional Lab Migrant Program; Teacher Corps, Washington, D. C.; Southern Association of School and Colleges; Buffalo State University, and numerous local organizations.
	Frances Fuller met weekly with the R & D Conceptual Design Group.
	Visitors to this division have included public school principals, teachers, supervisors, researchers and publishers from the United States, Canda and abroad.
	Research assistants in the Personalization Division abstracted or reproduced studies for faculty which relate both to personalization and to their area of interest.

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03.0203

INDIVIDUALIZED TEACHING FOR EFFECTIVE COPING (ITEC)

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There is no single, universal model of "effective teaching." Those "desirable" concrete teaching behaviors which consistently correlate with student gain data are yet to be uncovered. Similarly, personality characteristics of "model" teachers remain virgin territory.

Unfortunately, no data accurately describe those specific teaching behaviors which consistently lessen the anxieties of class life and those teacher acts which supplement and contribute to affective and cognitive pupil growth. Researchers are uncomfortably aware of the paucity of research affording an authoritative picture of classroom life and linking pupil performance with teacher behavior.

Getzels and Jackson (1963) aptly capture the impotence and impoverishment of this research. "Despite the critical importance of the problem and a half-century of prodigious research effort, very little is known for certain about the nature and measurement of teacher personality, or about the relation between teacher personality and teacher effectiveness (p. 574)." More recently, Gage (1968) indicates that current research on teacher effectiveness is not definitive, but mildly suggestive, breeding an infinite conglomeration of unanswered questions.

At the R & D Center for Teacher Education the search for THE effective teacher has ended. Research fully demonstrates that there is no simple response to the query, "What teaching method is best?" To answer, it is necessary to specify for what or for whom. What works well with primary children drawn from middle class suburban homes is not likely to spurt the cognitive or affective growth of rural, high school students. Many good teachers are not effective with lower-class children and many sound teachers do not possess the skills necessary for challenging the college bound students.

It is becoming clear that a teacher within one classroom will be more effective with some students than with others (Heil, 1960). Stern, (1964) provides interesting information which underlies the unevenness of the demands placed upon the classroom teacher.

He notes that some students need to "cling." Such students prefer to read assigned works and listen as the teacher lectures. Other students sitting in the same classroom need to challenge the teacher, discuss their ideas and to work independently. Can teachers satisfy these diametric needs equally? Riessman (1966) suggests that no two pupils learn the same things in the same way at the same speed. He further suggests that each student has his own distinct style of learning. Grimes and Allensmith (1961) imply that teachers need to differentiate their teaching methods if they are to reach all students in the classroom. "It seems probable that one cannot teach a single lesson in a particular manner with any assurance that all children will have perceived the content as intended or will attend to it as hoped, free of crippling anxiety or other preoccupation."

Little knowledge has been systematically recorded about the impact of teacher style and learner style. The interaction of teacher and child learning styles is one of the central objectives which the Center was chartered to study -- to develop basic knowledge about the way in which individual teaching characteristics interact with the individual characteristics of pupils and to explain how and why specific, differential learning occurs for different pupils.

General Background

Some three years of work with the schools were necessary to build a sense of mutual partnership and trust which is essential if teachers are to subject themselves to searching observation and to undertake intensive scrutiny of the actual effects of their teaching tactics on individual children. It took the same three years of work by a parallel, independently funded project (Coping Styles and Achievement, USOE Contract No. OE-5-85-063) to evolve a theory of coping behavior and operational measures, of its components. This system now serves as the integrating conceptual model for identifying crucial behavioral goals for pupils, methods for diagnosing their progress and methods of determining which teacher behaviors induce effective learning with particular kinds of children. The "payoff" for this is the development and testing of a new method for (1) educating teachers to be increasingly effective "copers" themselves, along the same dimensions found crucial to effective child learning and (2) increasing the coping effectiveness of their pupils.

Still another aspect of ITEC which required several years of prior research was the evaluation and testing of a consultative feedback model ("personalization" treatments) for inducing real, lasting change in teaching behavior, in directions consonant with the evolving theory of effective coping behavior. In earlier Center studies, methods have been developed for adapting college level training to the individual nature of prospective teachers. This program is to show teachers how to apply this same basic approach to their pupils.

A final necessary precursor to ITEC was the development of conceptual systems (e.g., FAIR) and the machinery (the Flexowriter system) for objectifying the analysis of videotaped records of teacher-pupil interactions and their effects.

Purpose

By the fall of 1968 the possibility existed, for the first time, of bringing all these ideas and facilities to bear, at once, on the problem which was originally posed as the Center's main task: to find ways of maximizing the beneficial impact of different kinds of teachers on the quite different kinds of children whom they teach. ITEC thus has a two-fold object:

1. to provide basic research evidence on the way particular teachers, using particular tactics, affect the cognitive and affective learning of different kinds of children; and

2. to test a strategy for training teachers to increase the effectiveness of their impact by helping them increase their skill at diagnosing the learning needs of children.

The training strategy aims at making teachers broader in the range of learning-goals they consider, more effectively independent in diagnosing pupil needs, and more resourcefully versatile in prescribing and invoking educative help from a variety of potential resource people, in and out of school. A good deal of basic research on this training process is necessary, of course, in order to find out exactly what aspects of the consultant-teacher interaction produce desirable results with particular teachers and why. Experiments are also necessary to determine whether this individualized approach to teacher education, in ther interest of individualized teaching of children, actually has the expected effects.

A primary thrust of the project is to develop and test ways of helping inservice teachers to individualize their instruction in order to enhance the coping ability and classroom performance of different kinds of students. Teachers appear to have needs for three types of tools if they are to promote self-starting, self-sustaining behaviors in children: (1) a clearer, more complete concept system for describing and evaluating student classroom behavior, (2) empirically tested techniques for dealing with different kinds of children and (3) better methods for assessing their teaching strategies, and their effect on different kinds of children. This study attempts to develop and test these tools, thus improving the technology for diagnosis and prescriptions of individual needs. In addition, the project will explicate a taxonomy of teacher styles and demonstrate how teachers with differing styles attempt to adapt their teaching to different types of students. Through the systematic study of inservice teachers, it will be possible to collect and analyze the raw material essential for the preparation of a variety of modules which will be used in teacher education programs. These materials are expected to enable teacher candidates to develop and perfect skills in diagnosing child behavior and individualizing instruction on the basis of child need.

ITEC and R & D

In earlier R & D Center studies of personalization and individualization, methods were developed for adapting college level training to the individual nature of prospective teachers. In summary, this personalized method has reduced teacher candidate anxiety about personal adequacy. Such instruction has enabled candidates to understand more about their own development in becoming a teacher and allowed them to analyze their own behavior more fully.

It has been possible to adapt college level training to the individual nature of prospective teachers. Starting from the premise that each teacher candidate has an idiosyncratic set of strengths and coping pattern, the goal has been to prepare teachers who are not cut from the same cloth, and to help each student develop effectiveness in perfecting his own personal style. Reserved students are not forced to model a dramatic showman style, but these students are taught ways to secure child responses -- ways that are in line with their teaching personality. Further by seeing and working with a variety of children at different age levels and from distinct socioeconomic areas, teacher candidates are helped to identify a teaching level that is most satisfying to them.

It has been posited (but never tested) that teachers who possess a healthy acceptance of their own behavior will be more sensitive in recognizing the unique needs of the students they teach. We now want to examine the class and address ourselves to the question, "Does increased knowledge about self enable the teacher to take greater initiative and to become more autonomous?"

Now we would like to collect research information pinpointing those training procedures which will allow candidates to understand their future pupils and allow them to individualize their instruction. The ITEC research program will lead to the development of modules and training films allowing teacher candidates to have increased initiative in confronting school problems, increased autonomy and self-reliance in solving them, and an understanding of how to describe, evaluate, and deal with different kinds of pupils.

The Porter project (03.0201) has aided experienced teachers to individualize instruction leading to improved classroom performance by student teachers. Unfortunately, the input information to inservice teachers was not systematically controlled making it impossible to determine which training procedures have maximum utility. The ITEC project will yield information about the effectiveness of various techniques (see proposal) designed to improve teacher ability to individualize instruction. Such research will enable the Center to incorporate the most useful inputs into modules for teacher education students. In addition, it will be possible to develop a methodological approach for studying how individual teacher characteristics interact with the individual characteristics of pupils. For example, it would be possible to measure the modeling effect by which teachers may influence certain children.

ITEC Roots

The ITEC project represents a logical outgrowth and extension of this Center's central concern with the individualization and personalization of teacher education. In addition, it is important to point out that ITEC does represent a research area that needs to be mined if modules are to be produced which deal with one of the central objectives of the Center. That is, to develop basic knowledge about the way in which individual teacher characteristics interact with the individual characteristics of pupils to explain how specific differential learning occurs for different pupils. This will point the way toward training procedures and materials that will have maximum effectiveness in helping teachers individualize instruction. This basic research has to be carried out, as those presently wanting to develop training packages face an unknown. We don't know enough about the interaction between teacher style and pupil style to prepare training materials capable of enhancing candidate's skill in individualizing their instruction on the basis of student needs and student learning style. Material can be presented in countless ways, but for a given student and a particular teacher which of the alternatives appear to be most attractive?

Research delineating teacher styles, pupil styles and their interaction needs to be conducted if the Center is to achieve any of its major goals. The question is really a temporal one, why conduct this research now instead of using manpower and money to finish modules in process, to field test such materials and speed up their dissemination? The R & D Center has been presented with a rare opportunity to collect and to have scored vast amounts of data at no expense. For a minimum expense it is possible to collect data that would have to be collected and analyzed at some point in the Center's history. It is possible to use the Cross-

National sample and to receive at no cost pre- and posttest administration of over 900 students in six different schools and to have many protocols scored at no expense.

By blending the ideas and measuring techniques from the ten years work in personalizing teacher education with the Cross-National Study of Coping Styles and Achievement (Peck, 1965) it has been possible to develop an assessment battery for teachers which makes it possible to draw direct comparisons in the styles of behavior between pupils and teachers. Such outcomes will be incorporated in teacher education materials to illustrate the influence of teacher behavior on student behavior. For example, it might be found that indirect teachers may be able to affect only minimum gains when dealing with children of limited background who need more structure. Such findings would be translated into training materials for the teaching laboratory and other components of our developing experimental program.

Video Tapes

An important implication of this study will rest in the information provided about the behavior of teachers and students. With the data, comparisons can be made between fifth- and eighth-grade classes in several subject areas. Changes in behavior occurring over a year's time can be described, as video tapes were collected throughout the year. Also, the relationships among a variety of teacher and student behaviors, and their relationships to selected teacher and student characteristics (e.g., personality variables, achievement scores, etc.) can be studied.

From the descriptive data for teacher-student behavior and the relationships among these behaviors, it will be possible to devise empirically based behavioral dimensions of teaching, which may lead to the development of behavioral tasks (i.e., microteaching skills) for use in laboratory teaching. Also, a comprehensive classroom observation instrument will be developed from a composite of the derived teaching dimensions. This instrument should be useful for preservice and inservice teacher education as a description of behavior on several basic teaching dimensions.

Relationship to Prior R & D Efforts

Work which preceded this year's project centers around the development of the FAIR (Fuller Analysis of Interacting Responses) observation system. During this time, considerable attention has been given to identifying reliable measures of affective teacher behavior. The utilization of this observation system is an important component of this project. Also, the development of the Flexowriter, a machine for coding recorded classroom behavior directly onto computer paper tape, preceded this project, and facilitates the processing of the observation data onto magnetic tape. Without the use of this procedure approximately 100,000 IBM cards would be required to code all the observation data.

Progress Report and Concrete Accomplishments

1. During September, 1968, principals and teachers in the cooperating schools were contacted by the staff, and inservice training meetings were held in order to train teachers to use the behavioral rating forms to describe the coping behavior of selected students.

2. During October the project teachers (N = 30) and students (N = 900) were pretested.

3. October, 1968. The special study children were identified. Out of the pupils meeting the age and SES criteria, four or five children were selected from each class for special study. The grades were divided into high, average and low thirds on CTMM I.Q. score by cutting .5 S.D. above and below the School mean. Within each class the boy and girl whose previous year's GPA rank in that class, shows the greatest positive discrepancy with their IQ rank in that class. The same plan was used to select the boy and girl exhibiting the greatest negative discrepancy.

4. Teachers were video taped five times from October to May.

5. October, 1968, coders were trained to code the various observational systems used in assessing the video tapes and coders were trained to score the projective items in the assessment batteries.

6. October, 1968 through July, 1969, coders have scored test batteries and videotapes.

7. October, 1968, principal investigators analyzed the assessment battery for the special study children. Profiles with accompanying suggestions were made for each child.

8. October, 1968 through May, 1969, each teacher met five times with a university consultant to discuss the special study children in her room. In consultation with psychological specialists teachers had the opportunity to draw upon a comprehensive assessment program, including videotapes to gain more understanding about the study children. Teachers and consultants planned strategies for helping the children and

discussed the effect of teaching tactics on the child's coping ability.

9. May, 1969, a special film of each class was made, suitable for showing to the students themselves. This film merely captured all students engaged in classroom activities. These films were made as a service to the teacher and students.

10. May, 1969, control teachers were shown videotapes of their teaching and presented with information about the project and their special study children.

11. May, 1969, the post battery was administered to students and teachers.

12. May, 1969, meetings were held to plan data analyses.

13. May through July, 1969, inductive work has begun on developing teacher and student typologies.

14. A report on instrument scoring follows, (Figure 1).

Figure 1

Instrument Inventory

Instrument	N =	Pre/Scored	Pre/Punched	Post/Scored	Post/Punched
Teacher Coping Behavior Ratings	114	-----	-----	@114	@114
Raven	900	-----	-----	@900	@900
Demo's	900	-----	-----	@900	@900 (being revised)
DI's					
10 yr.	55	55	55	55	55
14 yr.	58	55	55	@ 25	none
Adult	30	none	none	none	none
V.O.L.					
14 yr.	355	@355 (need to be partially punched)	@355	@355	@300 (ITEC has no copy yet)
Adult	@ 50 (John Avant)	@ 50	@ 50	@ 50	@ 50
Story Completion	900	@900	none	@800	
Sentence Completion	900	900	in process	900	in process
Teacher Questionnaire	30	-----	-----	30	30

ITEC Videotapes

Concrete Accomplishments through June 30, 1969. Three observation systems and a rating form are currently being used, and a fourth observation system is being developed, to analyze the 150 video taped lessons from this year's study. Coding completed to date is as follows:

1. FAIR (Fuller Analysis of Interacting Responses). Approximately 80 percent of the sample tapes have been coded, two separate codings per tape.

2. OScAR (Observation Schedule and Record, Form 5). Approximately 25 percent of the sample tapes have been coded, two separate codings per tape.

3. CASES (Coping Analysis System for Educational Settings). The behaviors of four students in each sample class are observed separately using this system. Since there are five observations of 30 classrooms, with four selected students per class, the number of separate codings in 600. Of these, approximately 90 percent have been completed.

4. CBF (Classroom Behavior Form). Each sample tape is rated separately by two observers. Approximately 80 percent of the required ratings have been completed.

Expected Outcomes

1. Devise a concept system which trains both inservice and preservice teachers to perceive unique characteristics of children and to organize appropriate intervention strategies.

2. Empirically tested techniques for working with different kinds of children. For example, teachers in training could see pre and post films showing the transformation of a passive withdrawn child into an active classroom participant. While verbally hearing what techniques had been employed, inservice teachers could see the progress -- a child who never raises his hand becomes an active participant.

3. A film library will be created making it possible for students to view the film of a teacher who capably demonstrates some teaching strategy. For example, a great amount of student initiated talk.

4. Such resource will allow teachers in training to see a wide variety of teaching styles and allow them to model a style more suitable to their personality.

5. It will be possible to show teachers in training videotapes which present the behavioral characteristics of selected student types, e.g. the underachieving child.

6. Develop a model for consultative feedback, identifying the procedures leading to behavior modification in teaching style. The project will yield useful information about how teachers can benefit from contact with university consultants. For example, What are the major obstacles in teacher-university conference and how can these be overcome...What level of information is useful for the teacher?

7. Basic research data will be provided concerning the "type" of student problems in the class that really bother a teacher "type."

8. A methodology will be developed for investigating teacher styles, pupil styles and their interaction.

9. Develop and disseminate a system of videotape recordings, coded and rated on a variety of dimensions, suitable for use in teacher preparation and inservice training.

10. Report measures of predictive and construct validity of various observation systems.

11. Test deductive and inductive hypotheses outlined in the ITEC proposal.... Synthesize and report research concerning the impact of consultative feedback on training teachers to individualize their instruction to meet the unique needs of certain students.

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03.0203*

CLASSROOM RESPONSE OPPORTUNITY PROJECT
ABILITY PATTERNS, CREATIVITY AND SEX-TYPING IN KINDERGARTEN CHILDREN RELATED TO SEX OF TEACHER (PILOT PROJECT)

Jere Brophy
Thomas Good

Dr. Brophy's primary interests lie in child development and early education, especially early cognitive stimulation of a compensatory nature. His major research activity has been the study of dyadic interaction between an adult and a child, especially in the deliberate teaching situation. He began in this area by developing methodology and coding systems for measurement of maternal teaching behavior in mother-child interaction situations, and since coming to the R & D Center in September, 1968, has extended this approach to the study of teacher-child interaction. This has led to the initiation of two R & D-related projects in the previous academic year. Progress on both these projects is reported below.

Classroom Response Opportunity Project

In cooperation with Dr. Thomas Good (co-investigator), methods for observation and measurement of dyadic interaction in the classroom (interactions between the teacher and one specific child at a given time) have been developed and applied in a pilot study. In this research Dr. Brophy and Dr. Good combined and built upon their previous experience in studying interactions between an adult and a single child to both develop a new methodological approach to the study of classroom interaction and to apply it in researching an important topic of current interest in educational psychology. The project thus had two major goals:

1. Methodological - development of the coding system. The methodological contribution of this study will be the development of a coding system and general research approach for the study of interactions between the teacher and individual children, in contrast to interactions between the teacher and the

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*This investigator was originally placed with the ITEC investigation team (see previous chapter), but has evolved separate research projects of his own. Although presently still carried under ITEC's 03.0203 project number, Dr. Brophy will be assigned his own level in the next program and project register.

> class as a group, the approach taken by other well-known coding systems. In order to study certain classroom events, it is necessary to take the individual child rather than the class as a group as the unit of analysis. The major coding systems for study of classroom interaction presently in use do not have this feature. Data taken from interaction with separate children is lumped into a single aggregate sum for the class as a group, and separate records are not kept for each child as an individual unit of analysis. This project has been concerned with development of coding systems for study of the individual child in the classroom, with particular reference to his interactions with the teacher. The system is constructed so as to be strictly behavioral; that is, coding decisions are made at the level of presence or absence of observable discrete behaviors and not at the level of quantitative judgment or rating.

Observation and measurement within the system are geared to those situations in the classroom in which the individual child is interacting individually with the teacher. Examples include recitation turns during class discussions and reading groups, answering of teacher questions (whether after being called on by the teacher or whether the child calls out a response without being previously recognized by the teacher), teacher-afforded dyadic contacts (in which the teacher singles out the individual child for questioning or comments regarding classroom procedures, his work, or his behavior) and child-created dyadic contacts (in which the child seeks out the teacher to ask permission on procedural matters or get help with seat work). The coding system provides for keeping a record of each such dyadic contact between the child and his teacher, and for some types of contacts, also involves distinctions in the behavior of the child (type of answer when answering a question, type of response sought from the teacher in child-created contacts) and in the behavior of the teacher (praise and criticism of the child, type of response to the child when he doesn't know the answer to a question).

An initial coding manual was assembled on the basis of methodology used in previous research, then was extended and revised several times after being field-tested in first-grade classrooms. A perfected version was then used in a pilot study of teacher-child interaction in first-grade classrooms in the Del Valle Independent School District. Four one-half-day observations were done in each of four first-grade classrooms for this research. Concurrently, reliability data were gathered both in the Del Valle and in the Austin Independent School Districts. These data are presently being processed, and will be included in reports to be written and circulated through the R & D Report Series. The first report will be a methodological one, summarizing the rationale for this approach to classroom research, presenting the latest version of the coding system and presenting reliability data.

2. Application - study of communication of teacher expectancies. Although the basic methodological approach developed in this project is useful for a variety of research purposes, the authors constructed it particularly for the study of the performance expectations communicated by teachers to their students. Presently, due to the widespread publicity and discussion regarding Robert Rosenthal and Lenore Jacobson's Pygmalion in the Classroom (New York: Holt, Rinehart and Winston, 1968), the idea that teacher expectations affect student's performance as to form self-fulfilling prophecies has become an important topic of interest. The data in this book have been subjected to severe methodological criticisms which cast doubt upon the validity of authors' conclusions. Even if one ignores these criticisms and grants the reality of the expectation effects that Rosenthal and Jacobson report, their work remains incomplete because it contains only antecedent and consequent measures without any attention to the processes intervening between the two points in time which presumably cause the effects observed.

In the present project Good and Brophy have attempted to develop a more powerful research design for investigation of this problem, a design that allows study of the processes involved in terms of operationally defined and observable behavior variables. The general model is that initial differential teacher expectations will result in the teacher treating different children differently, that this differential teacher treatment will cause the children to respond in complementary ways that reinforce the teacher's expectations and that eventually this differential performance in the classroom by the children will show up in their achievement scores. The methodology developed in this study allows systematic research of this model, by obtaining measures of the teacher's expectations for different children and then observing and coding her different treatment of each child, relating it finally to her expectations. In the pilot study referred to previously, teachers were asked to rank their children in order of achievement. This ranking was then used as the measure of the teacher's expectations regarding the children and was also used as a means of identifying target children to study in the teachers' classrooms. In each class six children for whom the teacher held high expectations (highs) and six children for whom she held low expectation (lows) were selected for study (without the teacher's knowledge that these particular children were being observed). Although the data are only presently being formally analyzed, it is obvious from inspection of the coding totals that highs have many more interactions with the teachers than do lows, receive much more praise and much less criticism from the teacher than do lows and, in general, are treated differentially from lows in ways that are consistent with the teacher's expectations. Of particular interest in the latter respect are some of the more subtle but clearly observable measures of communication of expectations. In reading groups, for instance, the teachers are more likely to re-phrase or repeat the question or give a clue to highs when those children give a wrong answer or are stuck. With lows, the teachers re-phrase or repeat the question or give clues less frequently, and more often supply the answer or ask another child to supply the answer. In other words, teachers press for and demand response from the highs, while they more easily give up and accept poorer performance from the lows. These and other data collected in the pilot study will be included in a second R & D report to be written after the data are formally analyzed this summer.

The successful outcome of the pilot project (in terms of development of a useful and applicable coding system and successful application to the problem of teacher expectation communication) has led to the development of two research proposals submitted to governmental funding agencies. One proposal is for a naturalistic, non-intervention study in which the observation system will be applied in several classrooms over the course of an entire year. The purpose of this study is to see if an orderly and predictable differentiation in the children's behavior occurs such that as the school year progresses, they come more and more to act in ways consistent with and reinforcing the teacher's initial expectations concerning them. Other aspects of the study will include extension to a greater range of social class and ethnic backgrounds in the schools selected for study and also evaluation of the direction of effect (that is, how much of the teacher's expectations and behavior are a result of differential treatment of her by the children themselves, and how much differential treatment of children is due apparently to the teacher's differential expectations for them). The second proposal is for an intervention study, in which the teacher's behavior with certain children would be discussed with her after an initial base rate-building period of observation. The design here will be similar to the usual behavior modification model, in which base rate data are built up through naturalistic observation, and then the teacher's pattern of behavior with specific children is discussed with her. Following this intervention with the teacher, evidence of change in the teacher's pattern of behavior with the children in question, hopefully in the direction suggested by the researchers, can be evaluated. At the same time, the teacher's patterns of behavior toward similar children not discussed with her will also be observed to see if the treatments radiate to children not specifically focused on.

The authors feel that studies connected with this project will have important theoretical and practical applications. Two major scientific contributions can be noted: development of a new methodology for classroom research which is potentially useful for investigation of a wide range of questions, and identification and demonstration of the behavioral mechanisms through which teacher expectations are communicated to students and which produce the self-fulfilling prophecy effects noted by Rosenthal and Jacobson. The latter outcome, if successful, would have immediate and important applications in teacher education. Presently, teachers and teachers in training are told about expectation effects and warned to avoid them or urged to communicate only positive expectations, but are not told how the process works and how to go about following the advice given. Indeed, those investigators who have dealt with the phenomenon have not identified any of the behavioral mechanisms involved. All too often, unfortunately, the subject is discussed in a way that oversimplifies to the point of making the process appear magical (all you have to do to get good performance is expect it or wish for it). Findings such as the authors hope to establish would eliminate this oversimplified and magical connotation and describe expectation effects in terms of observable sequences of cause and effect behavior. By focusing on the behavioral processes involved in the phenomenon, it will be possible to be much more specific and helpful in presenting teachers and teachers in training with information about expectation effects. Rather than merely declaring that such effects occur, it will be possible to discuss them as the end products of an observable differential treatment of individual children by the teacher and to describe the behavioral manifestations of this differential treatment in concrete, operationally definable and observable terms.

Pilot Project: Ability Patterns, Creativity, and Sex-Typing in Kindergarten Children Related to Sex of Teacher

An additional pilot project was carried out by Dr. Brophy as a result of contact with a male kindergarten teacher. Speculation about the possible differential effects that might be associated with male versus female teachers in kindergartens led to the initiation of a pilot project in which the children taught by the male teacher were compared with children in two other kindergartens taught by female teachers. Measurements were taken on variables related to sex-typing per se and on variables thought to be related to experiences primarily associated with sex role behavior of one sex rather than the other. Children in the three kindergartens were given measures of sex-typing (in terms of occupation, T.V. program, game and toy choices), creativity (Product Improvement and Unusual Uses from the Torrance Tests of Intellectual Activity), pattern of mental abilities (PMA) and sociometric peer choices.

It was predicted that in the male teacher's kindergarten sex-typing would be less extreme and less stereotyped, cross-sex peer choices would appear more frequently, there would be little or no status difference by sex in the sociometric choice ratings (girls are usually found to be higher on such measures), greater creativity would be shown on the Product Improvement task but not on the Unusual Uses task and spatial abilities would be relatively more developed in comparison with verbal, numerical and perceptual speed abilities. These data are presently being prepared for analysis. To the extent that hypothesized findings materialize, they will constitute evidence that the behavior measured is learned and effected by the sex-typed behavior of the teachers (models). If the pilot data are sufficiently encouraging along these lines, follow-up studies will be initiated in the coming year. One approach would involve multiple administration of the tests, to see if the children differentiate increasingly along predicted lines as the school year progresses. This would provide more definitive evidence that the differences observed are related to the teachers involved and not to other possible sources of variation in the groups. A second line of research would involve observation and measurement of teacher behavior in the classrooms in an attempt to identify the mechanisms producing the differential effects. Eventually this approach would lead to an attempt to separate effects due to differential stimulation, practice, and reinforcement (learning controlled by the usual mechanisms) from more subtle and implicit forms of learning proceeding through mechanisms of modelling and/or identification. To the extent that any consistent results come out of this line of research, many important implications for educational practice generally and teacher education in particular could be drawn. A major contribution would be similar to the one mentioned for the previous project - specification of the mechanisms involved. It is frequently suggested that elementary school is more meaningful for girls than for boys because the great majority of the teachers are female. Too frequently such discussion is restricted to modelling or identification mechanisms, with the at least implicit suggestion that the situation is permanent and determined solely by the teacher's sex per se rather than by her behavior. To the extent that it is true that school is more meaningful for girls than for boys, it seems likely that much of this difference is traceable to explicit behavior on the part of teachers rather than to implicit modelling and identification. To the extent that the relevant teacher behavior can be identified and communicated to teachers and teachers in training, the sex difference in relevance of school could be potentially considerably reduced.

03.03

ASSESSMENT (CONSULTING)
ASSESSMENT PSYCHOLOGICAL (CONSULTING)

03.0301

TEACHER AIDES IN A SECONDARY SCHOOL

03.0302

NORMATIVE ANALYSIS OF COLLEGE OF EDUCATION ASSESSMENT DATA

Donald J. Veldman
Shirley L. Menaker

A major research aim of the R & D Center for Teacher Education at The University of Texas is to conduct "basic research on the effects of varied kinds of teacher education on actual teaching behavior and consequent effects on child learning."

Related to this broad aim, the Assessment Division of the Center is involved in at least three separable activities:

> I. The continual development and testing of assessment instruments and scoring systems. Psychological assessment devices allow systematic and comprehensive understanding of individuals entering the teacher education program. Such understanding on the part of those responsible for the teacher education program can be used to maximize the impact of the program upon individuals in a variety of ways. Instruments which are developed by the Center for the assessment of teachers in training can be used both clinically (reviewed by counselors and used to provide personalized feedback to teacher trainees, see later description of "Assessment Module," Section I.C., produced by this division in coordination with the Personalization Division) and for measurement purposes (to assess the effects of particular programs of teacher education, etc.).
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> II. Assessment service activities: (a.) provision of scoring services on instruments to other research divisions and module-building groups within the Center; (b.) assessment consultation with other units of the Center.
>
> III. Division research projects. Research involving the maintenance of a large normative data bank of protocols of tests developed by the Center's Assessment Division and previous projects. This data bank is constantly being

added to by ongoing projects, and it serves as a pool of data for continued test development and development of new scoring systems. For example, new scoring systems can be tried out on old data where more material for concurrent and predictive validity are available. In addition, the data pool can be used for investigation of hypotheses generated from more recent data analyses. For example, a current study may offer evidence indicating that there are differences between the filmed and coded pupil-teacher interaction (see description of FAIR system in the Personalization division, section .03.02) in lower-class as opposed to middle-class schools. The data pool can provide data for the investigation of possible related questions: Are the personality characteristics of in-service teachers teaching in lower-class schools different from those teaching in middle-cla[illegible]hools? Are there social class differences (assessed [illegible]m Biographical Information) between pre-service teachers who elect to practice teach in lower-class as opposed to middle-class schools, etc?

In addition, other research projects (in cooperation with other Center divisions, chiefly Personalization, .03.02) are carried out that involve the use of assessment instruments for evaluation of changes effected by particular teacher education programs.

Following are detailed descriptions of the Division's activities -- including the current work (July 1, 1968, to June 30, 1969); the background of projects over the Center's past three years of funding (September 1, 1965, to June 30, 1968); and some future directions.

Development and Testing of Personality Instruments.

Test of Directed Imagination. The Directed Imagination Test (DI) consists of four blank pages. The adult subject is instructed to use the space to tell four stories about teaching, each story having a four-minute time limit. The instrument was first used in the PEB project at The University of Texas (1962-1967). A scoring system for the instrument was developed in 1966, involving techniques for quantifying the narrative data in such a way as to yield scale scores ranging from 1 to 7 on 15 separate psychological variables from the instrument. A manual describing the technique of rating is available from the R & D Center (Veldman, Menaker, and Williams, 1967). A complete description of the technique, including reliability and validity data, has been published (Veldman and Menaker, 1968).

In an analysis of the DI data of elementary subjects in the PEB project (Fuller, et al., 1968), the test of Directed Imagination was the one personality test which proved most sensitive to differential changes over time between two groups of undergraduate teachers-in-training, who had been exposed to two different types of teacher education programs. In addition, DI data reported elsewhere (Veldman and Menaker, 1968) indicates that the DI Scales successfully discriminate elementary from secondary majors, students who evidence a strong intent to continue teaching after graduation from those who have little intention of continuing, and students who sought extensive personal counseling (while pursuing their educational program) from those who did not seek such help.

Given the relative discriminative efficiency of the DI, work this current year has been directed at two procedures: 1. The necessary revision of the test for use with school-age children and the subsequent development of a scoring system for the stories which grade school children write when instructed: "Write two stories about school and teachers. You will be given eight minutes to complete each story." 2. The development of a revised scoring system for adult DIs, utilizing fewer and more independent scoring categories.

Nine scale scores ranging from 1 to 5 have been developed for the children's DIs and 11 scale scores for the adult DIs (nine of which are parallel to the children's category scores). The majority of this work has been carried out as a doctoral dissertation under the supervision of R & D faculty, with back-up scoring assistance from R & D rating staff.

Extensive data on fifth and eighth-grade school children and their teachers have been collected over the past year. The revised scoring system is being applied to these data. A wealth of information is available on this sample for use in tests of concurrent and predictive validity. Initial results indicate that scores generated by the current system are more reliable and re-analysis of some previously coded data (PEB sample, Fuller et al., 1968) may be undertaken in an effort to increase understanding of the important personality parameters which may have mediated the effects of two different educational programs carried out in a previous study.

One-Word Sentence Completion (OWSC). The Assessment staff of the Center have long been interested in the development of techniques for computer-based personality assessment. Many personality questionnaires (true-false, multiple-choice, etc.) can be machine-processed, but they are limited in the information which they can yield. On the other hand, projective instruments are generally characterized by lengthy verbal input which cannot be adequately handled by a computer without extensive pre-coding to reduce the data.

In an effort to retain the richness of projective instruments while observing the necessary restriction of limited verbal input, a new instrument was developed here in 1961, the One-Word Sentence Completion. The initial form (Form 4-A, Peck-Veldman) had 90 stems. The form contained the instructions to respond to each incomplete sentence (e.g. "___________ makes me happy.") with no more than one word.

In 1965, in connection with a study published elsewhere (Peck, Menaker and Veldman, 1966; Veldman, Menaker and Peck, 1969), Menaker studied the lists of raw responses to each stem which had been compiled from a sample of 1000 female sophomores, and selected 25 psychological constructs for which sufficient information appeared to be provided by the 90-item OWSC form. Going through the compiled stem lists, positive and negative weights were assigned by construct to all of the non-unique responses. These weights, in combination with the responses to which they were assigned, made up a scoring dictionary. Utilizing this dictionary, a program was written to score individual protocols (which had been keypunched) by computer on 25 psychological variables. When the 25 scores thus obtained were compared with scores on the same variables rated by two clinical raters, it was found that the computer scores correlated with the individual raters as well as the raters' scores correlated with each other. Correlations between machine scores and pooled ratings of the two raters averaged .66 across the 25 variables and ranged from .45 to .94. (The sample selected for comparison rating was composed of 79 protocols which had not been included in the basic sample of 1000 cases.)

This original scoring system was used for scoring protocols in the PEB study and appeared to be sensitive to changes in feelings of self-ability experienced by PEB subjects from their junior to their senior year of college. Thus, as scored on the OWSC, senior year students were significantly more able to deal with pupils, surer of their ability to withstand stress, had increased feelings of persistence and tenacity, felt more independent and were less concerned with failure (Fuller et al., 1969).

Extensive validity studies of this scoring system are now in progress. Preliminary evidence indicates that the computer derived scores are as useful as ratings made by clinicians -- and far less expensive. Other forms of the OWSC have been developed since 1961, chiefly a short 36-item form used in a large freshmen study at The University of Texas and a 62-item form, employing more stems of particular relevance to teacher training.

A second scoring system has been developed by Veldman, initially for the 36-item form but adaptable to forms of any length. This system differs from the previously described system chiefly in its use of "generic roots" rather than raw response words as the basis of its dictionary. Raw responses are punched, and then reduced to word roots (e.g. LOV is substituted for LOVE, LOVES, LOVED, LOVING), one root serving for many raw responses judged to be of semantic equivalence. Word roots which are synonymous are then clustered together under a much smaller number of generic roots. These generic roots are then used with the 36 stems to form stem-generic combinations and, finally, these combinations are used to define a series of 40 structural and psychological variables. In a recent revision, these 40 have been reduced to 20. Validity studies of this scoring program are currently in progress.

A total of 1501 62-item OWSC protocols are available from the College of Education normative battery for the 1968-69 academic year. These are protocols of all junior-year education students enrolled in the first semester of professional (teaching) preparation.

Scoring systems of both of the types described above will be written for these protocols. A small sample (N=c.200) of these students was re-tested after a four-week interval to provide data for test-retest reliability studies. Extensive data are available on sub-units of this sample of 1501 students, and these data will provide opportunity for investigations into the concurrent and predictive validity of the scoring systems.

Self-Report Inventory. This instrument was developed by O.H. Bown during the Mental Health in Teacher Education project (1958-1964). The form in current use is the third major revision of the instrument. It consists of 48 item statements which are answered self-descriptively with five-point scales. The items are scored for eight aspects of attitudes: Self, Others, Children, Authority, Work, Reality, Parents and Hope. A total score is usually computed, as well as a score reflecting use of extreme scale points, and a self/others ratio has also been employed in some analyses.

The instrument has been used in a variety of research projects prior to the inception of the R & D Center. The first of the Research Methodology Monographs edited by D.J. Veldman for the R & D Center concerns the development, scoring and normative interpretation of the instrument, and is presently available in preliminary draft form (Bown and Veldman, 1968). The instrument is also a part of the standard battery of tests administered to all students who enroll in the introductory Educational Psychology course at The University of Texas, under the assessment program conducted by the Dean's Office of the College of Education.

The monograph that constitutes the manual for this instrument is being completed during the current fiscal year. Normative data on students in the College of Education has been collected and reduced to percentile interpretation tables to be added to this manual, and additional validity data will be obtained as the results of the analyses from the Porter project (discussed later in this report) are completed.

Dr. Bown has recently developed a fourth version of the instrument, modified to be maximally suitable for use with adults. This instrument (R-4) should be especially valuable in future studies of in-service teachers and teacher aides.

Recognizing that a substantial portion of the item variance of instruments such as the SRI and ASD (later items in this report) can be isolated as a general response set toward extreme vs. central scale choices, a pilot study was conducted to determine the effect of "correcting" the scale scores for such general tendencies. When the original and corrected scores were compared for validity against two sets of external criteria, it became quite apparent that the corrected scores were inferior to the uncorrected versions. This avenue of research was discontinued at that point.

The data from the Porter project will be used for a variety of validity studies of the SRI, which are not included within the design of the Porter project, but which are quite feasible with the data in hand. The Research Methodology Monograph will be completed and released for distribution. Data will continue to be gathered with the instrument as part of the College Assessment Program, and the norms will be refined with them. Because of the value of additional validity studies, staff of this division will continue to offer consultative and scoring services to graduate students and others engaged in non-R & D research with this instrument.

Adjective Self Description. This instrument was developed outside of R & D Center support from the results of a factor analysis of the 300 dichotomous items of Gough's Adjective Check List, which was based on a sample of more than 5000 freshmen (and women), and which yielded seven very clear factors of self-perception, which were demonstrated to be equivalent in structure (although not in mean level) for students of either sex (Parker and Veldman, 1969).

The eight terms that loaded each factor most heavily were alphabetized, and a form was set up with five-point self-rating scales for each word. This form has been printed as a Digitek optical-scoring answer sheet, and has been a standard part of the College Assessment program since September, 1968. A study based on more than 700 female education students demonstrated the factorial invariance of the structure to a surprising extent, and concurrent validity with the SRI scales was also shown (Veldman and Parker, 1969).

This instrument is simple and straightforward enough to serve as a vehicle for an exploratory application of remote computer terminals to assessment techniques. A program is now under construction for the IBM 1500 computer operated by the Computer Assisted Instruction (CAI) Laboratory in the College of Education. The primary emphasis of this application will be the increased self-awareness that could ensue from direct feedback of normative interpretations to the student at the terminal.

Normative data on College of Education students are being gathered and reduced, and the staff of this division is also cooperating in a variety of validity studies by graduate students and other non-R & D supported research efforts.

In addition to pilot testing of the CAI application of the instrument, a monograph will be prepared with a full explication of the scoring system, normative percentile tables, and summaries of validity evidence. The instrument will continue as a part of the College assessment battery. Of particular interest will be an unanticipated initial finding that the factor called "Individualism" does not appear as a coherent dimension among graduate students, despite the fact that it emerges clearly with freshmen and juniors. Further studies of adult samples will be needed to explore this phenomenon.

Biographical Information Form. Research projects preceding the R & D Center (MHTE and PEB) utilized a form designed to elicit verbal responses to open-ended questions concerning family background, marital status, educational history and work experiences, as well as future hopes and expectations. These forms were sometimes coded for quantitative analysis (Veldman, Peck and Richek, 1968), but were not designed for such uses. They have proved to be of great value in clinical assessment procedures, however (Veldman, Peck and McGuire, 1961). The form now used in the College of Education Assessment Battery was derived from earlier forms of this type, and is not designed for quantitative scoring.

So that quantified data of this type might be obtained economically and objectively, efforts are now underway to design a multiple-choice form to cover systematically the key areas of personal experience background. Forms of similar purpose have been gathered from a variety of sources and are being examined to contribute to an item pool. Within the next year a questionnaire will be in the pilot testing phase. Special efforts are being made to avoid items which may seem "prying" or offensive to some students. Very often, such items (e.g. those pertaining to religious activities) have little justification in terms of demonstrated relevance to the concerns of teacher educators. Others (e.g. those concerning family size and parental work experience) would appear to be of possible significance in the preparation of teachers.

A pilot form of a multiple choice Biographical Information instrument will be used during one semester of the College Testing program and evaluated by staff members familiar with uses of this type of data. The measures will also be subjected to internal analysis and validated against other criteria in hand. Because of the special value of verbal responses to open-end questions in a clinical/counseling situation, the present form will be retained as part of the battery.

Semantic Differential. This technique was originated by Osgood in his studies of semantic space, and has been applied by psychologists to a wide variety of research problems. It consists of a series of bi-polar adjective pairs defining the ends of seven-point rating scales, which are applied to particular "object" words. Osgood found repeatedly three major "dimensions of meaning": evaluation (good-bad), activity (fast-slow) and potency (strong-weak).

Forms of this instrument have been used by the Science In-Service Project (David Butts and colleagues), in its collaborative work with the R & D Center, to measure attitudes toward various aspects of training programs in inquiry teaching techniques. A 12-scale form was also used with eight object terms in the assessment battery of the Porter project.

The data collected in the Porter project served as a basis for a series of studies of the SD technique itself. The eight-term, 12-scale form called "Viewpoint on Teaching" was administered four times in the course of the two-year teacher education program. The items were scored for Osgood's three factors, which were equally represented in the design of the form. Intercorrelations of the scale scores were so strong for most of the object words as to cast doubt upon the use of 24 separate scale scores in further analyses with the instrument.

A factor analysis was conducted with analytic rotation toward the hypothesis of three major item factors (E, A, P). This hypothesis was not supported sufficiently to warrant such scoring. Another analysis was then carried out against the hypothesis of eight "object term" factors. With the exception of one item-scale which was consistently misused, this hypothesis was supported. At least with objects of the kind used in this form (e.g. "teachers," "pupils," "lecturing"), it appears that one general factor--evaluation-dynamism -- accounts for most of the variance of the respondents' behavior.

Preliminary results of data analysis from the Porter project indicate that this highly focused method of assessing attitudes and differential changes between experimental subject groups is a very useful and sensitive technique. Further analyses of the Porter data will be undertaken to explore other correlates of response to this instrument.

Teacher Perception Test (TPT). In 1967-68, a pilot study was undertaken, focused on the development of a projective instrument similar in form to the Thematic Apperception Test (TAT) but with pictures designed specifically to tap areas of concern to student teachers. Two parallel sets of ten pictures each were developed and tried out in pilot studies with elementary and secondary education majors. Administration was in a group form, the two parallel sets of ten pictures having been photographed and made into 35mm. slides, which were projected during class sessions. Subjects were given standard TAT instructions, the only deviation from these being that the pictures were identified as being "about school situations" and subjects were held to four minutes of writing for each story.

From the resulting protocols, in 1968-69, scoring systems were inductively developed and the ten "best" pictures (the most productive ones from each theme-pair) were selected as a final set. These ten pictures were scored on seventeen variables and t-tests were made to compare scores of elementary vs. secondary education majors. Seventeen variables were thus scored on each of ten cards for two types of subjects. Of the 170 comparisons made of elementary and secondary majors, elementary majors differed significantly from secondary majors on 25 (t-test, $p < .05$). The results, both impressionistically and statistically, appear to indicate that further development of the Teacher Perception Test would yield a valuable instrument for assessing teacher trainees. Redirection of assessment efforts in the Center toward the development of tested assessment packages and evaluation of programs by well documented tests in the field has led to (perhaps temporary) abandonment of this effort. Initial results have been written up (Williams and Menaker, 1969) and are available from the Center. These results may serve as the basis for continued work in this area at some later date.

Development and Testing of Behavioral Assessments

Pupil Observation Survey. This instrument was developed as part of the MHTE project which preceded the establishment of the R & D Center, and has been used in a large number of researches which have supported its validity (Veldman and Peck, 1963, 1964, 1969; Veldman and Kelly, 1965; Veldman, in press). A Research Methodology Monograph (No. 2) has been released by the R & D Center, which contains background information, scoring procedures, normative data and summaries of validity evidence.

The instrument consists of 38 item statements on a machine-scoreable answer sheet, which is filled out by each pupil in a teacher's class. These item scores are converted to item means for the class, and then to regression-weighted factor scores by a computer program. The profile of scores on the five factors describes the teachers' typical classroom behavior as seen by students, and hence provides an important alternative to data obtained by video-tape or by single-session adult observation.

A recent analysis of the POSR data on file at the R & D Center on over 600 teachers (roughly 18,000 pupil protocols) demonstrated that ten items selected from the 38 to measure the five factors (two items each) could be used to form simple two-item sum scores that correlated very strongly with the full 38-item regression-weighted factor scores. Furthermore, three-item sum scores provided no improvement in estimation over the two-item scores. This analysis is described in Research Methodology Monograph No. 8 (D.J. Veldman).

A new version of the POSR technique containing only ten items, called "Student Evaluation of Teaching," has been outlined and will be tested in a variety of college, high school and upper elementary classrooms by the staff of the R & D Center. Because of the wording of the present items, the author feels that the new SET form may prove useful in a wider variety of settings than was the original POSR.

Since the POSR was included in the battery of measures used in the Porter project, further validity evidence for the technique will also be sought from this source.

Fuller Affective Interaction Records (FAIR). The FAIR system for coding sequential pupil-teacher verbal interaction from films of videotapes of classroom activity exists in two forms: FAIR 12 and FAIR 33, which differ in the number of categories into which interaction is divided. The 12 categories of FAIR 12 contain seven categories of teacher activity and five of pupil activity (including a code for silent work), while the 33 categories of FAIR 33 divide teacher behavior into 15 categories (including silent work on the teacher's part) and also divide pupil behavior into 15 categories (including silent pupil work), leaving three additional codes for technical failure, inaudible action, and classroom interruptions by P.A. system, visitors coming in, etc. In FAIR 33, the 15 pupil and teacher categories are designed to be somewhat parallel in affective meaning.

FAIR 12 and FAIR 33 were designed by the Personalization Division (03.02) and are fully described in a Research Methodology Monograph from this R & D Center (No. 6, Fuller, 1969). In addition, the monograph also describes in detail three other rating forms for rating interaction, one of which (the Classroom Behavior Rating Schedule) is a global rating instrument for rating teachers' personal characteristics (e.g. warmth, phoniness, confidence, etc.) which may bias ratings of the sequential behavior.

The Assessment Division cooperates with the Personalization Division in the efficient use of the FAIR systems. As described later in this Division report, the Assessment staff supervises the training of raters to rate films by the FAIR system and processes these ratings, preparing and running programs to compile percentage scores of different kinds of behavior for further analyses.

In addition, the Assessment Division monitors inter-rater reliability on the FAIR coding systems and feeds back information to the Personalization Division as to what codes appear to need further specification.

Situational Task for Evaluating Teaching Effectiveness (SITE). In Characteristics of Teachers, Ryans (1960) discusses at length the use of product measurements (estimates of behavior or achievement of pupils) in evaluating the teacher's effectiveness. Ryans seems to feel that the employment of pupil change (on some behavior or achievement measure) as a criterion of teacher effectiveness can be justified in a strict experimental situation which involves the following two conditions: (1) the teachers being judged teach groups of children matched with respect to a number of relevant factors, such as similarity of earlier learning experience and (2) the measured product (learning) is related to a relatively simple task which can be completed in a single sitting. If such a design is used, one might then reasonably assume that the pupil change was really a product of teacher behavior. A situational task fulfills the second of these two requirements. The first can be partially controlled by treating the ability level of the students as measured by a pre-test as a co-variable.

Lamkin and Veldman, in 1967, developed a situational task for evaluating teaching effectiveness. A Research Methodology Monograph (No. 5, Lamkin and Veldman, 1967) has been released by the R & D Center, which contains a complete description of this task and research connected with its use. The teaching task chosen to be assessed was "vocabulary building." Students were given a vocabulary test consisting of 45 words with five possible definitions listed for each word in a multiple-choice format. Words for the task were chosen from different subject matter fields suited to the grade level involved (seventh). The task was administered as follows: during the first section (approximately 13 minutes), identifying information was obtained from students, the pre-test was administered and the teacher was given a list of the words involved (with some definition material included) in order to prepare for teaching. Prior to this time, the teacher knew only that the task would be vocabulary in content and that she would be given 20 minutes to teach. During the second section of the period (after the pre-tests were collected), the students were given a list of the 45 words for reference and the class was turned over to the teacher for instructional purposes. Following the teaching, the post-test (identical to the pre-test) was administered, together with some pupil observation questions. In some "no teaching" sections involved in the original study, following the pre-test administration, the students studied the list of 45 words for 20 minutes and then were given the post-test. For a complete description of the many questions investigated and the statistical techniques employed by the authors, the reader is referred to the monograph cited earlier. In the original study, the authors were interested in the effects of different levels of teaching experience on achievement scores (with ability of pupils held constant), and also in the possible differential effects of subject matter. Results suggested that level of teaching experience made a contribution to pupil gain (also that "teaching" was superior to "no teaching" with respect to gain). Results also indicated that subject matter area did not make a contribution to pupil gain when ability was held constant.

Given the data presented in the study (Lamkin and Veldman, 1967) the authors felt that the task outlined had considerable promise as an instrument for educational research on teaching.

The SITE task was administered in the classroom to all subjects in the Porter study (see later discussion), when they were involved in student teaching in their senior year. In addition, students were video-taped while they were involved in the SITE task. A number of analyses are planned for these data to provide information on questions such as the following: (1) Are specific kinds of teaching behavior (as rated by FAIR 33) related to greater gain on the part of pupils as measured by the SITE task? (2) Do student teachers who have had the opportunity to serve as teacher aides in their junior year teach in such a way as to produce greater achievement on the part of pupils?

In addition, discussions are underway with regard to the possibility of developing a SITE task suitable for administration to elementary school children (the current SITE was designed for seventh graders).

Description of Assessment Module

Increase in self-awareness and decrease in distortions about the self and others are desirable in training young teachers, so that they may interact effectively with their pupils and co-workers. Research at this Center (Fuller, Menaker, Peck and Bown, 1967; Fuller, et al., 1969), has shown that counseling-oriented interviews (in conjunction with other measures also designed to increase a student teacher's self-awareness) produce significant positive changes in a teacher's subsequent interactions with pupils. These interviews are most effective when preceded by a psychological assessment of the teacher involved. This assessment enables the counselor to enter rapidly into a meaningful interchange with the teacher. The assessment module being developed by personnel of this division (in collaboration with the Personalization Division) will aid a counselor substantially in making such a psychological assessment. The major objective of the module is to teach counselors to utilize instruments developed by this Center to assess teacher candidates. The counselor will be able to make a reliable rating of the candidate on important variables and will be able to select topics for an interview. A second objective to be incorporated in a later section of the module, is to teach the counselor how to use the assessment information to initiate and maintain a productive interview.

A "training kit for assessment" is being developed for the prospective counselors. This kit consists of actual cases from the Center's files, each including the complete filled-in psychological test battery, a Center counselor's rating of the test battery, and a step by step description of how the rating was made. A general manual and specimen cases will be included. The prospective counselor will rate cases to assess reliability (by comparison with ratings made by Center counselors). Objective two will be carried out by providing an "interview training package" including annotated typescripts of the initial counseling interview associated with the cases used in the "assessment kit."

Basically, the assessment instruments which are included in the module are those which have already been described in the discussion of the Test of Directed Imagination, the One Word Sentence Completion, the Self-Report Inventory, the Adjective Self-Description and a Biographical Inventory. As previously described, separate rating scales have already been developed for many of these instruments. They were well designed for their original purpose, the assigning of quantitative scores to assessment instruments in order to compare one subject with another and to measure change within a subject over time, by means of repeated testing and scoring. They were not designed to communicate objectively the qualitative, idiosyncratic characteristics of subjects in order to prepare for an initial counseling interview.

Assessment Division staff are currently making use of these quantified profiles of Center subjects in order to "boil down" the multiple rating scales to a smaller number of constructs (less than 20). They are then rating subjects on these constructs from all test material and keeping track of the specific means by which they make the ratings: what construct is contributed most heavily by what test, what information from what test is given more weight in most cases of discrepancy (where BIOFORM indicates one possible direction and SENTENCE COMPLETION indicates another), etc.

By means of such analyses, unratable constructs are being dropped, and methods for rating are objectively specified in order to produce an eventual rating manual which will have demonstrated reliability. A manual in draft form is currently available. It provides detailed instructions for interpretation of the entire assessment battery as a unit and for rating the subject in three major personality areas, with sub-divisions for each area as follows:

I. INTRAPERSONAL COMFORT

  A. Expressed Self-Competence
  B. Inferred Self-Competence
  C. Happiness
  D. Emotional Maturity
  E. Sense of Identity

II. INTERPERSONAL BEHAVIOR

  A. Attitude toward Others
  B. Attitude toward Children
  C. Interpersonal Comfort
  D. Interdependence

III. ENVIRONMENTAL INTERACTION

  A. Creativity and Energy
  B. Orientation toward Achievement
  C. Teacher Role Identification
  D. Work Orientation
  E. Assumption of Responsibility

The draft form of the manual is undergoing revision following its use with a selected sample of cases. Scales showing low scoring reliability are being rewritten. At the same time, sample cases from Center files are being selected for inclusion with the revised manual.

When the revised manual is available (c. August 31, 1969), the "kit" (consisting of manual and cases) will be turned over to naive raters, who have not worked on the development of the system, to see if the instructional material provided is sufficient to enable these raters to assess new cases reliably (in comparison with ratings made by Center counselors).

Assessment Service Activities: Provision of Scoring Services

In addition to the consultative services offered by the Assessment Division to other units of the R & D Center (see below) regarding the design of test instruments, the Division also maintains a staff of raters to score test protocols and videotapes which require processing. Scoring services are provided for both personality instruments and behavioral assessments. Of the seven personality instruments reviewed earlier, two are machine-scored directly from the answer sheets (SRI and ASD), one is key-punched and then machine-scored as described previously (OWSC), one is key-punched and machine-scored (SD), one is not scored (Biographical Inventory) and the two remaining must be rated by clinical raters with the use of a manual (DI and TPT). These data are typically rated by two raters and the pooled rating is used for scoring purposes.

Other units of the Center specify the populations to be tested, administer the actual tests (often with the assistance of Assessment Division rating staff) and then the protocols are turned over to the Assessment Division for human or machine processing. While the seven personality instruments specified are the ones with which the Assessment Division is chiefly concerned, the Assessment rating staff is available to be trained in the rating of other personality instruments which may be specific to a given project.

In the area of behavioral assessments, a similar situation pertains. The Division staff is responsible for the training of raters to rate videotapes. Other units of the Center arrange with the Television Service Division (02.02) for tapes to be collected. These tapes are then turned over to the Assessment Division and each rated by two raters on FAIR system 33 and any other rating systems requested.

The POSR is administered to grade school classes when requested by other Center units. Assessment Division staff often assist in administration. The machine-scoreable answer sheets are processed by the Assessment Division and factor score results are returned to the individual project involved.

Scoring services such as are described above have been available from the Assessment Division (under its various names) from the inception of the R & D Center in September, 1965. All of the personality and behavioral data involved in the PEB project (Fuller, et al., 1968) were scored by Assessment Division personnel.

To give some idea of the amount of scoring service rendered, the following data were processed by the scoring service staff of the Assessment Division during the past year (July 1, 1968, to June 30, 1969):

College of Education Normative Data

1494 SRI protocols
1481 ASD protocols
1501 OWSC protocols

Porter Project

142 videotapes of student teachers rated by two raters on FAIR 33 and an affective rating form
34 videotapes of cooperating teachers rated by two raters on FAIR 33 and an affective rating form
128 DIs rated by two raters

ITEC Project (see report, 03.0203)

118 videotapes rated by two raters on FAIR 33 and an affective rating form
562 videotape viewings by a single rater in which the rater sequentially codes the activity of a single child in the film by the CASES coding system
72 videotapes rated by two raters on the OScAR system
c. 240 DI children's protocols rated by two raters
c. 240 Story completion protocols rated by two raters (narrative data, clinical rating)
c. 60 DI teachers' protocols rated by two raters
c 60 Story Completion protocols rated by two raters (narrative data, clinical rating)
c. 30 POSRs processed

Miscellaneous R & D Projects

68 videotapes rated by two raters on FAIR 33 and an affective rating form
27 videotapes rated by two raters on an additional rating system: SIMULTANEOUS

Assessment Service Activities: Assessment Consultation

Assessment activities are involved in the module-building process of other R & D units in two particular ways: (1) pre-post measures of understanding within the module itself and (2) measurement of module impact with regard to external criteria, such as pupil performance. In addition, various types of assessment activities are a part of almost all research projects conducted by the various divisions of the Center.

Pre-Post Module Measures. The theoretical model upon which instructional packages or modules are being built provides for initial diagnostic-orienting measures of knowledge-skill and for repetition of these measures at the conclusion of the module activities to permit individual assessment of the attainment of module objectives. Although many of the prototype modules developed to date by other R & D units do not yet contain assessment measures entirely compatible with this model, continued consultation with this division will be aimed at this goal.

For a variety of reasons, most modules will use multiple-choice questions for this purpose, using the same set of questions at the pre and post points of assessment. Although summary scores -- or score patterns over subsets of content -- will be returned to students for diagnostic and orienting purposes, the right answers will not be revealed to them, in order that the post testing can employ the same questions. For rapid scoring and objectivity of interpretation, the use of multiple-choice question formats will be encouraged instead of true-false, matching or open-end questions.

Module Impact Measurement. Because the criteria for this type of module assessment are not directly implied by the content of the module itself, we here approach the usual problems of evaluating instructional programs of any type. The relevance of the criteria, the psychometric properties of the measures chosen and considerations regarding experimental design are all topics which this division is prepared to consider in a consultative relationship with various module-building groups.

At present, the prototype modules developed by R & D units such as those led by David Butts (Elementary Science) and Jean York (Team Teaching) are being field tested on a relatively small scale to detect major flaws and general reactions from typical user groups. In this context, evaluation is necessarily aimed more at gathering information to guide revision than at "proving" the intrinsic or comparative ability of the modules to achieve their objectives under a wide range of conditions.

As the module construction process proceeds and prototypes are refined and widely disseminated, rigorous research designs involving widely varied samples of users will become more appropriate than they are at present.

Other Assessment Consultation. Since the R & D Center was established, the staff of the Assessment Division provided consultative assistance to other units of the Center with regard to assessment methods and their applications. The Science Inservice Project has conducted a number of studies employing instruments derived in part from such cooperative efforts. The division which has been most closely associated with Assessment in this type of consultation is Personalization, however, since their activities are so dependent upon the use of assessment techniques. The ITEC project has also been deeply involved in the use of assessment techniques, and staff members of this division have contributed considerable effort toward the development of appropriate instrumentation.

Division Research Projects

In addition to consultative assistance to other divisions of the R & D Center, the staff of this division has also taken primary responsibility for the design and analysis of certain pieces of research, usually in a framework where another R & D division or external organization has gathered the data and/or carried out the experimental treatments.

College of Education Dean's Office. As noted earlier, the Assessment Division has been intimately involved with the design and refinement of most of the instruments used in the College of Education Assessment Program. In addition, staff members of this Division have assisted Dr. Richard Connelly of the Dean's Office in the routine of preparing the forms, conducting the assessment procedures, filing, and data processing of the data collected. The SRI data are item-punched and computer scored. The ASD data are machine-scanned and computer scored. The raw responses to the OWSC instrument are punched and compiled by stem.

Recently, normative tables of percentile equivalents have been established for the ASD and SRI instruments, and a computer program has been developed which scans the scale scores, picks out those beyond the 10 percent and 90 percent levels and prints verbal statements. Reports from the counselors in the Dean's Office are that this screening output is very helpful in flagging cases deserving further study.

Normative data banks have also been established for the OWSC instrument, and will be used to construct a new scoring system for the 62-item form now in use.

Student Evaluations of Courses and Instructors. In 1966 and 1967, staff members of the Center assisted the Teaching Excellence Committee of the College in the design and data processing connected with a survey of student perceptions of College courses and instructors (Veldman, 1968). This program was turned over to the Measurement and Evaluation Center of the University for routine continuation in the Spring of 1968. An attempt was made by faculty members from the R & D Center to regularize this program to include *all* instructors, rather than volunteers only. The motion failed in the Spring, 1969, meeting of the College faculty, thus destroying any hope of developing adequate norms for studies of longitudinal change in student evaluations of the College program. This evaluation is, however, being continued on a voluntary basis and, where a sufficient number of instructors agree to cooperate in an experimental study, such data can be of value.

The Porter Project. This is a large-scale experiment conducted jointly with the Personalization Division. The primary focus was the effects of introducing a six-week experience as a teacher-aide in a public school classroom as part of the introductory course in Educational Psychology. A complex design covering the two-year period of professional courses permitted study of a number of subsidiary questions as well. One of the two experimental groups received additional psychological feedback based on assessment instruments and video-taped classroom behavior. Half of each experimental group was placed back in Porter Junior High School for their student-teaching semester to evaluate the effects of this way of capitalizing on their familiarity with the school.

The extensive assessment program of this project will provide data for a continuing series of instrument validation studies, as well as hypothesis-testing not concerned with the primary design. For example, one study, already completed, examined the relationships between student teachers and the cooperating teachers to which they [illegible] assigned in terms of the evaluations they received from the same classes of pupils (Veldman, in press). Other projected studies will seek to relate personality and background characteristics of incoming students to the various performance measures, regardless of the type of program to which they were exposed (unless the experimental treatments turn out to be strongly effective).

Preliminary results suggest that the teacher-aide experience had definitely positive effects upon students' relationships with their public school cooperating teachers and university supervisors. It also seemed to produce a significantly greater interest in a professional teaching career. An unanticipated difference between students enrolling in Fall and Spring semesters of the introductory education courses will complicate comparison of the two forms of the experimental treatment. Most of the analyses of variance for the primary design have been completed, the major exception being the coded video-taped behavioral data, which have been hung up with hardware problems. A complete report of this project will be released by the end of the current fiscal year, as well as a condensation suitable for general distribution.

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03.04

LEARNING TECHNOLOGY (CONSULTING)

Michal C. Clark

The Learning Technology Division is primarily a consulting division of the R & D Center. The primary goal of this division has been to act as a resource for information and assistance to R & D Center personnel in educational technology--specifically instructional design and computer applications in education. A minor goal has been to stimulate and carry out research and development activities in learning technology.

Procedures

The primary goal has been achieved in four ways. First, a series of instructional design workshops were presented for all R & D Center personnel. These workshops served to present an instructional design approach to module-building. Second, individual module builders and teams have made use of the division's open door consulting policy. The division staff meets with module builders to provide the resources of an instructional designer whenever requested by a module builder. Third, the division reviews and critiques modules from the standpoint of a learning technologist. This review often takes the form of editorial evaluation. Fourth, the division serves as a liaison between R & D and the Computer Assisted Instruction Laboratory. In this way the division makes available to R & D personnel the facilities and resources of the CAI Lab. Several R & D projects have been directed at building CAI programs, and all of these projects have utilized this service of the division.

Currently, this division is significantly involved in the development of the modular teacher education program. The division has been instrumental in preparing the conceptual framework for the R & D Center (the model teacher education program) described earlier in this report. The division is primarily responsible for the development and implementation of the module production and quality control system. The division is also actively engaged in developing a prototype of an instructional management system to be used with the modular teacher education program. This latter activity is the route currently being pursued to achieve the division's minor goal.

The division has continually consulted with module building groups and with developers of projects using CAI facilities. During the spring semester, 1969, the division supervised an evaluation of several statistics programs in an educational psychology course in teacher education program. As spin-off this "project" provided a description of what attributes are desirable in such a statistics program or set of modules.

The activities of the division are more "project" oriented. The module production and quality control system has been developed. Implementation of it is proceeding quite well. The results of the "project" on the conceptual design for R & D appeared earlier in this report. The development of the prototype instructional management system is just beginning.

Working Relationships with Other Groups

Within the Center, the Learning Technology Division has good working relations with all module builders and with all of the R & D groups developing CAI programs. The division has also worked very closely with the conceptual design committee.

Outside the Center, the division has established a working relationship with a branch of the Southwestern Educational Development Laboratory through its work with the Bilingual Module Development Advisory Committee.

03.04[*]

APTITUDES AND SOCIAL MODELING INSTRUCTION

APTITUDES AND INDUCTIVE AND DEDUCTIVE SEQUENCES OF PROGRAMMED INSTRUCTION

Mary Lou Koran

A primary objective of the R & D Center has been the individualization of instruction in the preparation of new teachers. The projects reported here were designed to explore the possibilities of achieving such individualization of instruction through investigation of aptitude-by-treatment interactions.

One of the problems confronting innovators of teacher education programs is that of determining the most effective methods for training the individuals encountered in large groups of persons possessing dissimilar abilities.

Methods of instruction may vary greatly, and a given individual may learn more effectively from one method than another. This "best" method differs from one individual to another, such differences being related to learner characteristics (Cronbach and Snow, 1969; Gagné, 1967). Both learner and instructional system may benefit if they could be properly paired. Experimentation designed to relate such manipulation of programs to selected cognitive and personality variables is important for evaluating learning efficiency in teacher education programs.

The aptitude-by-treatment interactions concept proceeds from the assumption that by differentiating educational treatments in such a way as to maximize their interactions with an individual's aptitude variables, learning for that individual can be maximized -- if, indeed, such interactions do exist. Accordingly, teacher trainees could then be assigned to programs of instruction on the basis of relevant aptitude scores, alternative treatments being available to provide facilities for most efficient acquisition of teaching skills.

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[*] Dr. Koran, as a new member of the R & D staff, was originally assigned to the Learning Technology (Consulting) section, and we present her report with that section. However, because her work has evolved away from the primary concerns of that section, Dr. Koran will be assigned a new level on the next Project Register.

Briefly then, the aptitude-by-treatment interaction is being investigated as a possible means for sorting individuals into various programs of individualized instruction, with the purpose of providing the most efficient learning situation for each individual.

To this end, this investigator has extended research data collected in prior research at Stanford, attempting to consolidate and orient those results in such a way as to provide effective input into the modular teacher education program now under development at the Texas R & D Center.

Two studies are directed to this end.

Aptitudes and Social Modeling Instruction

This initial investigation of aptitude-by-treatment interaction within the context of teacher training explored the role of trainee aptitudes on observational learning (Koran, McDonald and Snow, 1969; McDonald and Koran, 1969). Within the microteaching program at Stanford (McDonald and Allen, 1967) an interesting comparison between instructional methods has been observed between videotaped model demonstrations of desired teacher behavior and simpler, verbal descriptions of the criterion behavior. Proceeding from this observation, the purpose of the study reported here was to examine the effects of verbal and perceptual dimensions of individual differences as they related to the efficacy of two modeling procedures.

At Stanford, 121 intern teachers were given aptitude tests and randomly assigned to three treatment groups: a film-mediated model of a teaching skill; a written model of the same skill, consisting of a verbatim text of the sound track from the film model, and a control group with no model. Criterion measures assessed included the frequency, variety and quality of the teaching skill as used in three separate teaching sessions.

Aptitude-by-treatment interactions were evaluated by comparing the regression slopes for differing treatments. Analyses of aptitude-by-treatment interactions indicated that scores in several of the aptitude tests interacted significantly with the instructional treatments. The magnitude of these interactions tended to increase across teaching sessions.

While the initial purposes of this investigation were satisfied, in view of the limited work done in this area, the results obtained generate questions concerning the most appropriate kinds of statistical analyses for research of this type. In association with Dr. Richard E. Snow at Stanford University, more complete statistical elaboration of these results is currently in progress.

A logical next step would be to combine aptitude variables to describe complex interactions, using multiple rather than simple regression analyses. Preliminary work has suggested that multiple combinations of different types or classes of aptitude measures may be necessary in order to obtain aptitude-by-treatment interactions that are optimal in criterion payoff.

A complete report concerning this work is projected for October, 1969.

Aptitudes and Inductive and Deductive Sequences of Programmed Instruction

In accord with suggestions arising from the previous study regarding the theoretical model used, an additional ATI investigation in teacher training was undertaken. The purpose of this study was to determine the effects of individualized differences on learning from inductive and deductive sequences of programmed instruction.

The sample for this experiment consisted of 128 subjects enrolled in the introductory educational psychology course of the teacher preparation sequence. As before, subjects were randomly assigned to experimental treatments following the administration of selected aptitude tests.

The programmed subject matter consisted of concepts selected from the area of elementary statistics and test interpretation. A linear sequence, constructed responses and a horizontal format were used for the program. Four forms of the programmed booklet were prepared (Krumboltz and Yabroff, 1963). Each booklet consisted of 117 frames. The frames used in each booklet were the same; only the order of presentation varied. The contents included inductive and deductive sequences. Two arrangements of each method were used, blocked and mixed. In the former, all rules and definitions for each concept were presented together. In the mixed arrangement, rules and examples for a given concept were interspersed, providing frequent shifts between rules and examples. In this manner a 2 x 2 factoral design was employed, consisting of two teaching methods and two alternation frequencies.

Criterion measures assessed included:

1. Number of program errors
2. Time during instruction
3. Score on Knowledge of Rules subtest
4. Problem-Solving subtest score
5. Time on Knowledge of Rules subtest
6. Time on Problem-Solving subtest.

Criterion measures 3-6 were obtained from a test given two weeks after the completion of the programmed booklets.

Ability measures for the experiment were selected from the French Kit of Reference Tests for Cognitive Factors (French, et al., 1963). The abilities assessed are believed to be those which distinguish most clearly between the programmed instruction sequences and are consistent with an analysis of task and ability variables derived from the theoretical model previously used (Melton, 1967). The ability measures selected included measures of Verbal Comprehension, Induction, Deduction, Reasoning, Associative Memory and Memory Span.

Analysis of variance will be used to test instructional treatment main effects. Aptitude-by-treatment interactions will be evaluated by comparing regression slopes for different treatments.

All data for this study have been collected and the analyses are underway. The results should be available by October, 1969.

Should the expected results for this study be obtained, efforts will be made to compile these experimental materials in modular form and generate a prescription scheme for assigning teacher trainees to these modules on the basis of their aptitudes.

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04.0101

TEACHING LABORATORY MODULE BUILDING

O. L. Davis, Jr.

The goals of this project are:

1) To develop and test procedures and systems involved in a teaching laboratory integral to an introductory course in secondary education.

2) To propose procedures and systems for utilization of teaching laboratory systems in connection with other courses.

3) To develop and test pedagogic tasks (modules) in the Teaching Laboratory.

4) To conduct research on all elements of the Teaching Laboratory, and

5) To disseminate findings of developmental and research activities.

This project is imbedded in the context of one course (Ed. C. 332S), an introduction to secondary school teaching. The Teaching Laboratory is an accepted, integral component in all sections of the course. The project director is also coordinator of the course. Instructors, including teaching associates, are involved in the development and research of procedures and systems. Most research, indeed, has been conducted in cooperation with teaching associates.

The Teaching Laboratory project was launched in the Spring semester, 1967. During the first six months, research and development about microteaching was reviewed, people knowledgeable about microteaching were interviewed, and four staff members attended the Stanford Microteaching Workshop. In addition, plans were made for beginning the Teaching Laboratory (TL) in the Fall, 1967, semester. During the 1967-68 academic year, eight of 13 sections of the Ed. C. 332S course incorporated the TL and involved were three instructors and three teaching associates. Four basic teaching tasks were developed and revised: they were Clarity of Instructional Objectives, Interaction, Refocusing and Presentation. That year also saw the completion of two research studies. Also, one instructor associated with the project from the beginning left the principal group to develop a new set of teaching tasks in cooperation with an instructor from Educational Psychology; this set of tasks was to be used in a team teaching situation. Since that time, Spring, 1968, that effort has proceeded independently of the main TL project (04.0103).

During 1968-69 the second year of the project decreased financial support by the R & D Center for the project diminished the potential output. Nevertheless, considerable progress was made. During both semesters, all but two sections of Ed. C. 332S incorporated the TL; during the summer, all sections were TL related. Two of the original TL tasks were revised and tried out. Video equipment, ordered a year earlier, was received during the Spring, 1969. Only short trials were conducted with this equipment to date. Larger and systematic tests will include use of this equipment next year. The year was quite productive of research and development activities, at very low cost to the R & D Center. Three major projects were completed and a fourth initiated:

1) Thomas B. Gregory, a teaching assistant with the project for two years, developed and tested a new set of TL tasks focused on problem solving. His research was reported as his Ph.D. dissertation. In addition to the tasks and the research report, he produced two computer programs useful in subsequent research efforts.

2) Kevin R. Morse, a teaching assistant and research associate with the project for two years, developed and conducted research on a new TL task on Questioning. His TL task is available in a preliminary version under R & D imprint. Also available is his manual for the QSOS (Questioning Strategies Observation System), a new classroom observational system.

3) Robert M. Brashear, a teaching assistant for one year, completed research on differences in teaching behaviors during student teaching between teacher candidates who had and who had not had the TL in their Ed. C. 332S course. This Ph.D. dissertation provides some evidence about an often-asked question about persistence of TL affected teaching behavior.

4) Donald L. Hoover, a teaching assistant for one year, studied the differential affects of two types of supervisory feedback on subsequent teaching behaviors in the TL. This research, begun during the Summer 1969, will be reported in his Ph.D. dissertation in the Fall of this year. A preliminary study to Hoover's larger inquiry was also completed.

Two Computer Assisted Instruction activities related to the TL project were also completed this year. Both were conducted by teaching assistants assigned to Ed. C. 332S but with no R & D Center support for the program writing. Thomas B. Gregory prepared a Computer Assisted Instruction program on the categorization of classroom questions. Donald L. Hoover and Paul W. Kirby developed a Computer Assisted Instruction program to teach individuals to use the Observation Schedule and Record 5V (OScAR 5V). Both programs are being readied for test in the project during the Fall, 1969.

Several of the tasks originally developed for the TL are scheduled for substantial revision during 1969-70. Also, several new tasks have been designed. Research efforts during the coming year are focused on procedural components (e.g. peer or real pupils as TL pupils, audio or video recording and feedback, immediate or delayed feedback).

Working relationships of this project are reasonably secure with several other groups.

1) Relations with the Department of Curriculum and Instruction have become stronger during the tenure of the project. The departmental Chairman and Budget Council have provided considerable support and this encouragement has increased steadily. Assignment of instructors and teaching assistants to Ed. C. 332S sections is not capricious and is done in cooperation with the course coordinator/project director.

2) Communication has been maintained in part with the two instructors developing an alternate set of TL tasks for use in a team teaching arrangement (Ed. C. and Ed. P. courses). Hopefully, this communication may be increased in the coming year.

3) A rather close relationship is current with the R & D Data Processing Division. Several project studies have called upon this division very little; a few have been very dependent on its services.

4) Strong ties have been developed with the Television Division. This division maintains all audio and video equipment, advises with the project about support and helps organize space and provide some personnel for project operations.

5) Off-campus, a group of associated researchers has been formed. This group is composed of former TL project teaching assistants and research associates. Members will disseminate project developments and research, will

conduct cooperative research and development activities and will meet systematically (at the annual AERA convention) to make plans and share results. Members at present include:

Dr. Robert M. Brashear, Western Michigan University

Dr. Thomas B. Gregory, Indiana University

Mr. Donald L. Hoover, Baton Rouge, La., public schools

Dr. Marcella L. Kysilka, Florida Technological University

Dr. Kevin R. Morse, Kansas State Teachers College, Emporia

Dr. Virginia M. Rogers, University of Kentucky

Dr. B. R. Smoot, University of Arkansas

Dr. Drew C. Tinsley, University of Missouri at St. Louis

04.0102

THE SCHOOL AS A FORMAL ORGANIZATION

Michael P. Thomas, Jr.

This project is to have as its end product a series of instructional modules based on concepts drawn from theories of formal organization. The experience of first-year teachers in many school systems seems to suggest that their initiation into the school system as a bureaucracy is even more anxiety producing than their entrance into the classroom. There is sufficient knowledge about the impact of the structure of an organization and its maintenance activities on the behavior of people to warrant including what might be called organizational skills in the preparation program for teachers.

Procedurally, our plan is to develop modules that: 1) involve students in a simulation of some aspect of organizational life so that they will have a reality reference for later discussions, and 2) demonstrate the usefulness of organizational frames of reference for understanding that reality.

Progress to Date

The following modules have been developed and given preliminary testing for feasibility in the preparacion program.

1. A negotiations situation within the context of which students bargain for concessions with a school board. The objective of this module is to inform students about the legal, financial and structural constraints on program development, staffing patterns and individual autonomy in school organizations.

2. A generalized problem-solving game designed to demonstrate the effects of various patterns of organization on the capability of groups and of individuals to make decisions.

3. A filmed case together with a discussion guide designed to suggest the usefulness of such organizational concepts as goal displacement, control mechanisms and delegation for understanding certain kinds of problems.

4. A written case together with a discussion guide designed to draw the students' attention to the constraints of the community context on the behavior of the schools and teachers.

Our experience with these modules in the undergraduate program argues for some change in plans. The students seem to have so little factual basis on which to generalize about school organizations, even though they may have had a period of observation in the schools, that a module patterned after the in-basket approached often used in administrator preparation programs will be developed. Items for the module will be collected from inservice teachers in Austin and elsewhere, and will be compiled into a package which will be used as a basis for discussion about decision-making processes. Following the development of this module, work will continue on the remaining modules described in previous reports.

Most of these modules are pre-tested with inservice teachers before they are introduced into the preservice program in order to make reasonably sure that they are relevant to the needs of teachers. Thus we have working relationships with many schools in and out of Texas as they request help in designing their inservice programs. Once the modules have passed the scrutiny of inservice teachers, they are tested in classes taught on campus, typically in conjunction with the student-teaching experience.

04.0103

A LONGITUDINAL STUDY OF THE DEVELOPMENT OF TEACHING SKILLS IN A TEACHING LABORATORY

Edmund T. Emmer
Gregg B. Millett

The purpose of this project is to examine changes over a semester in the teaching behavior of preservice teachers in a teaching laboratory and to relate these changes to attitudinal and self-perceived characteristics of the teachers. Test data include pre and post tests for a self-descriptive adjective check list (ASD), an open-ended Directed Imagination test, and a Self-Report Inventory (SRI). Also audio tapes of each of eight lessons taught in the teaching laboratory have been made. These have been rated on four dimensions: clarity of objectives, determining readiness, motivating and evaluating; and each tape has been coded using Flanders' Interaction Analysis.

Complete data have been collected from 90 preservice teachers, and analyses have begun. The results of these analyses will provide information pertinent to the following questions:

1. To what extent, and in what ways, is the entering teaching behavior of preservice teachers different?
2. How are differences in entering behavior related to certain attitudinal and self-perceived characteristics of the teachers?
3. To what extent is change in teaching behavior in a laboratory related to entering behavior and to pre and post attitudinal and self-perceived characteristics of the teachers?

04.0104

THINKING/COMMUNICATION SKILLS
INCREASING PROSPECTIVE TEACHER POWER

Sara W. Lundsteen

The current, major goal of this project is development of a module, "Listening Memory Span," for improving the short-term memory for auditing verbal information.

This project has received only limited R & D support and has been brought to its present state through employment, for class credit, of a graduate student in Computer Assisted Instruction.

A second goal has been development of methods and materials for improvement of language arts instruction, testing those materials in two College of Education curriculum classes. The loss of a work study assistant has halted work in this area.

The Listening Memory Span Module

The specific object of this project is to help preservice teachers develop their short-term storage capacity for auditory information. This goal is founded on the fact that minimal short-term retention of information is necessary for any learning or knowledge and the assumption that the degree of skillfulness in listening is positively related to the length of the auditory memory span.

An incidental benefit to preservice teachers is also derived from participation in the modular program. Learners who take the program are at least exposed to the vocabulary, concepts and statements related to the topic of skillful listening. This might result in some extension of the benefits of the program to public school classes and to the pupils in those classes.

Computer Assisted Instruction (CAI) was selected as the medium most suitable for presentation of the program. The use of CAI not only allows efficient and appropriate presentation of materials to the learner, but it also provides a useful tool for the study of that material, its presentation and its relation to the general area of skillful listening.

The first part of the format consists of introductory procedural instructions presented via the computer's terminal typewriter and by a printed instruction sheet which accompanies the program. The learner indicates his understanding of the instructions by typing a response to a question put by the terminal typewriter; he then receives a short pretest to determine the level of his entering skills. If the learner fails to meet a minimal entering criterion, he is not permitted to continue in the course. Nor is he permitted to continue if his entering skills are already as great as the highest level of performance permitted by the program. Learners between these extremes will be passed to a level most appropriate to their entering skills.

In the course proper, the learner is administered a series of training trials from the computer tape recorder which require the learner to store more and more information per trial as the course proceeds. In this fashion the learner moves through a maximum of five difficulty levels until an end-of-course criterion is met.

Testing of the Module

After some 100 hours of development work and writing a module was readied for testing. Testing was to be conducted with curriculum classes normally taught by the principal investigator. However, just as the module became available for testing its program, written in Coursewriter I, became obsolete with the acquisition of new CAI facilities which utilize Coursewriter III. The program could be adapted for the new equipment, but the principal investigator is leaving at the end of the summer, 1969, for a year's leave-of-absence and the project will be at least temporarily shelved.

Language Arts Bibliography

In the course of work preparatory to the fabrication of a language arts module a spin-off product was an annotated bibliography of articles stressing pedagogical materials for instruction in listening. This bibliography is to be distributed by NCTE/ERIC. The actual production was not supported by R & D Center funds, however.

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CURRICULUM-BASED INSTRUCTIONAL APPROACHES MATHEMATICS AND SCIENCE MODULE BUILDING

E. Glenadine Gibb
Gene E. Hall
Heather Carter
David P. Butts

The Educational Encounter*

Teachers teach, but do students learn?

The search for an operational answer to this question has led to many alternative descriptions of the complex encounter between students and teachers. Careful examination of this encounter suggests that it includes identified desired outcomes for the encounter, specific components of the encounter and the actual student achievement as a result of the encounter.

Analysis of the encounter suggests that the central core is the interpersonal interaction of teachers and students. Surrounding this interaction are those topics of intended instruction -- or, the context of instruction. Enveloping the context of instruction is the social-organizational context of the school and society from which the goals of instruction are secured. Each of these three groups -- student, teacher and school -- contribute to the description of desired outcomes of the encounter and, to some extent, each contributes to the actual learner achievement. Encounter sequences are identifiable both at the college level and at the school level.

When one considers the desired outcomes of the instructional context at the college level, input from schools, professional educators and students has resulted in the specification of three categories of outcomes. They are:

1. Competency (understanding and skill in doing the task),

2. Design of instruction or the pre-active phase of teaching, and

3. Instructional decision-making or the interactive phase of teaching.

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*This conceptual theme is developed in more detail in Gibb, Hall and Butts, "The Educational Encounter: Towards a Paradigm of Teacher Education," R & D Center mimeograph, 1969.

The same three reference groups again have an input into the actual encounter both at the college and school level. Those factors which are directly related to the achievement of specific objectives have been described as filters of the encounter. These filters are:

1. the student,
2. the instructor,
3. conditions for learning and
4. interaction between instructor and student.

Figure 1 illustrates the two sequences of the educational encounter. Figure 2 illustrates the relationship of categories of desired outcomes and the filters of instruction.

The basic interest of the Mathematics-Science Module Building Group is how pupils feel, what they know and how they can use mathematics and science. Furthering our knowledge of the relationship between the desired outcomes for the teacher education program and its actual achievement is one of the continuing areas of research interests of the Mathematics-Science Module Building Group. Conducting research to determine the predictive effectiveness of various combinations of filter elements with the context of instruction represents a second area of our interest.

Our primary goal is for teachers to enjoy teaching science and mathematics and for students to enjoy learning science and mathematics.

Progress to July 20, 1969

The progress of the Mathematics-Science Module Building Group will be described here under four categories of activities.

First, the development of instructional modules, an activity sponsored by the R & D Center. These modules are designed to permit research to further the relationship between elements of the four filters and focal planes 1 and 2 (F_1 and F_2).

Second, the Mathematics-Science Teacher Education Program -- a program which has made it possible to evaluate outcomes at the four focal planes (F_1, F_2, F_3 and F_4), an activity sponsored by the Science Education Center.

Third, the College Educators Leadership Conference, jointly sponsored by the Science Education Center and the R & D Center, which

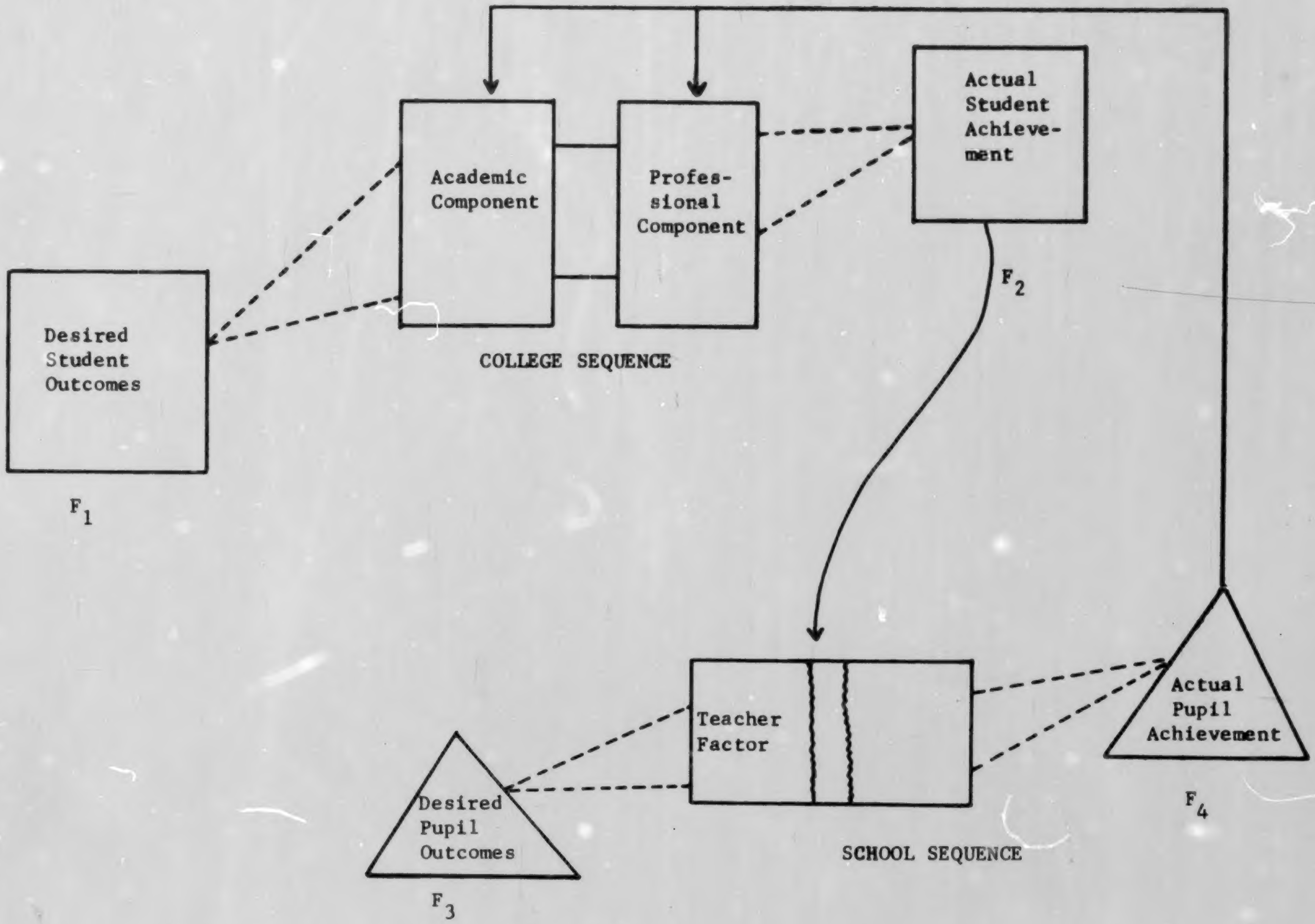

Desired Student Outcomes
F_1
Academic Component
Profes-sional Component
COLLEGE SEQUENCE
Actual Student Achieve-ment
F_2
Desired Pupil Outcomes
F_3
Teacher Factor
SCHOOL SEQUENCE
Actual Pupil Achievement
F_4

Figure 1

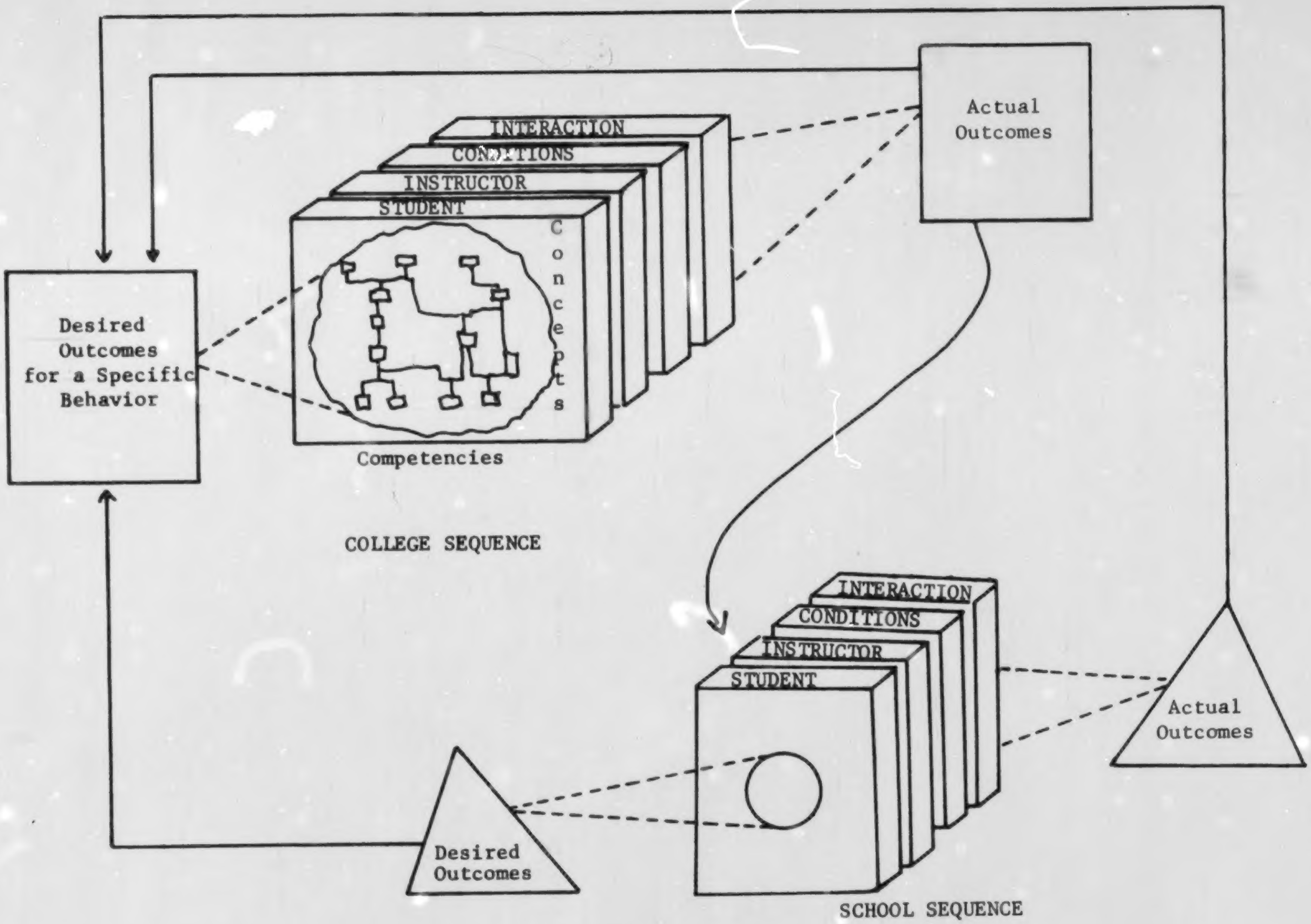

Desired Outcomes for a Specific Behavior
INTERACTION
CONDITIONS
INSTRUCTOR
STUDENT
Concepts
Competencies
Actual Outcomes
COLLEGE SEQUENCE
INTERACTION
CONDITIONS
INSTRUCTOR
STUDENT
Actual Outcomes
Desired Outcomes
SCHOOL SEQUENCE

Figure 2

has made it possible to explore the procedures necessary to change the instructor filter of the college sequence of encounters. This has been a challenging extension to educate college teachers to use the instructional modules.

Fourth, research reports, which are of two types: one set of these reports describes studies in which the changes in student behavior (F_1 to F_2) or changes in pupil behavior (F_3 to F_4) have been related to specific filter elements. A second set of reports describe the development of specific instruments essential to measure changes at these focal planes.

Instructional Module Development

Basic to the validation of the paradigm of teacher education, the Educational Encounter, are specified components of that paradigm which can be systematically manipulated to observe effects on actual achievement. Since April, 1968, a major amount of our time has been directed toward the development of a series of modules that are a part of the professional preparation of the college sequence of educational encounters. These modules are systematically designed instructional packages structured for efficient learner acquisition of specified behaviors. The components of each module are:

I. Objectives

Statement of what specific performance capabilities the participants should be able to do by the end of the module.

II. Rationale

Rationale including general goals of the module, analysis of the sub-tasks in the module, the relationship between instructional activities of the module and the objectives, description of sub-tasks involved in each activity, evaluation data on the use of the module during pilot study grouping and related references to the module.

III. References

A listing of those references that are directly related to the topic or content of the module and which would be most relevant to the instructor.

IV. Materials List

In the module, various materials are called for. In this list, they are specified along with the instructional activity with which they are to be used.

V. Instructional Activities

A. Each module begins with a pre-appraisal that is task-related to the module's objectives. Using this as a diagnosis of group or individual performance, the instructor can then select those activities, the modules, which are designated for the objectives the participants need.

B. The instructional activities are presented in a step format as one way to assist participants to achieve the behavioral objectives. Alternative instructional activities are possible and many times will be presented.

C. The appraisal activities are other situations in which the instructor can rediagnose the performance capabilities of his group; based on this he can make the decision to proceed or to go back and reteach.

VI. Duplicated Material

Materials to be handed out to the students have been assembled in a student work text. They are also included in the module in two sets: one without answers and one with acceptable responses included.

Thus, a module is designed to assist students in acquiring specific behaviors. Does it? Answering this question involves the procedure for development of a module. Following the initial writing of the module the author collected the materials and taught the module to at least three groups of preservice or inservice teachers. Modules developed to date have usually been presented as a class session in a conventional methods course. A member of the Mathematics-Science Module Building Group staff observed the presentation and maintained a running commentary of the participant reactions, including specific points of confusion. Following this pilot testing of the module, two basic questions were asked:

1. Is it teachable? Can the module be presented as written?

2. Are students able to achieve stated objectives as a result of the experience?

Once the module had been taught in the trial version, it was rewritten and further pilot tests of the module were made by other members of the Mathematics-Science Module Building Group. It has been our general practice that all modules are pilot tested with both preservice and inservice teacher populations.

Following the revision, a first experimental edition is readied for field testing. Up to the point of field testing, the module is generally used only by members of the Mathematics-Science Module Building Group. Once the module is in the first experimental edition, the module is available to other interested people for field testing.

So that feedback information from field testing will be systematic and of the greatest possible use to the Mathematics-Science Module Building Group, a Module Feedback Form has been designed. The information from field testing will provide the basis for revision of the first experimental edition. Following revision, the second experimental edition will be field tested. Once the module is deemed ready, the material specifications are stated and a final edition of the instructor's guide and student section will be prepared for dissemination. In the preparation of the first experimental edition it is anticipated that research studies will be conducted to determine the most effective combination of filter elements for student acquisition of desired outcomes. It is also anticipated that studies to determine the empirical validity of a sequence of behaviors will be possible.

In the Program Plan and Budget Request dated November 1, 1968, the proposed plan for the Mathematics-Science Module Building Group was specified. Figure 3 is a tabulation of present progress.

Figure 3

Investigator	Proposed Title	Present Title	Projected Status as of 7/1/69	Present Status as of 7/1/69
Hall	Interpreting Data	Meaning of Data	Trial Edition Prepared for Pilot Test	Pilot Testing Completed, 1st Experimental Edition Written
Hall	Formulating Hypotheses	No change	Trial Edition Prepared for Pilot Test	Pilot Testing Completed, 1st Experimental Edition Written
Hall	Identifying Teaching Behavior	Analysis of Teaching Behavior	Trial Edition Prepared for Pilot Test	Pilot Testing Completed, 1st Experimental Edition Written
Hall	Demonstrating Teaching Behavior	No change	Trial Edition Prepared for Pilot Test	Outline to be Developed
Gibb	Mathematics in the Elementary School--An Overview	No change	Trial Edition Prepared for Pilot Test	Trial Edition Revised for Pilot Testing
Gibb	Diagnosing Learning	Creative Problem Solving	Trial Edition Prepared for Pilot Test	Pilot Testing Completed, Ready for Preparation of 1st Experimental Edition
Gibb	Instructional Procedures Developing a Mathematic Concept	Developing a Mathematics Concept	Trial Edition Prepared for Pilot Test	Outline of Module Completed

Figure 3 cont'd.

Investigator	Proposed Title	Present Title	Projected Status as of 7/1/69	Present Status as of 7/1/69
Koran	Performance Criteria in the Elementary School	Elementary School Teacher Performance Tasks	Trial Edition Prepared for Pilot Test	Pilot Test Completed, 1st Experimental Edition Written
Koran	Scientific Process Invitation	No change	Trial Edition Prepared for Pilot Test	Development of Module Discontinued
Koran	Science Teaching Behavior Analysis	No change	Trial Edition Prepared for Pilot Test	Pilot Testing Completed, 1st Experimental Edition Written
Koran	Science Content Analysis	No change	Trial Edition Prepared for Pilot Test	Development of Module Discontinued
Koran	Instructional Design in Elementary School Science	No change	Trial Edition Prepared for Pilot Test	Development of Module Discontinued
Koran	A Survey of Elementary Science Curriculum	No change	Trial Edition Prepared for Pilot Test	Development of Module Discontinued
Butts	Overview of Science	No change	Trial Edition Prepared for Pilot Test	Outline of 1st Trial Edition Completed
Butts	Observing, the Basis of Science	No change	Pilot Testing Completed, 1st Experimental Edition Written	Pilot Testing Completed, 1st Experimental Edition Written

Figure 3 cont'd.

Investigator	Proposed Title	Present Title	Projected Status as of 7/1/69	Present Status as of 7/1/69
Butts	Comparing Observations	No change	Pilot Testing Completed, 1st Experimental Edition Written	Pilot Testing Completed, 1st Experimental Edition Written
Butts	Describing Observations	No change	Pilot Testing Completed, 1st Experimental Edition Written	Pilot Testing Completed, 1st Experimental Edition Written
Butts	Describing Events	No change	Pilot Testing Completed, 1st Experimental Edition Written	Pilot Testing Completed 1st Experimental Edition Written
Butts	Reasoning About Observations	No change	Pilot Testing Completed, 1st Experimental Edition Written	Pilot Testing Completed, 1st Experimental Edition Written
Butts	Organizing to Investigate	No change	This module was not proposed in the original sequence; this is an addition to the proposed sequence. 1st Experimental Edition is written.	
Butts	Stating Instructional Objectives	No change	Pilot Testing Completed, 1st Experimental Edition Written	Pilot Testing Completed, 1st Experimental Edition Written
Butts	Self Diagnosis and Goal Setting	No change	Trial Edition Prepared for Pilot Test	Trial Edition to be outlined

Figure 3 cont'd.

Investigator	Proposed Title	Present Title	Projected Status as of 7/1/69	Present Status as of 7/1/69
Butts	Teacher-Student Interaction	No change	Trial Edition Prepared for Pilot Test	Trial Edition to be outlined
Butts	Environment Management	No change	Trial Edition Outlined	Trial Edition to be outlined
Butts	Designing Instructional Sequences	No change	Trial Edition Prepared for Pilot Test	Trial Edition to be outlined
Butts	Instructional Alternatives	No change	Trial Edition Prepared for Pilot Test	Trial Edition to be outlined
Butts	Diagnosis of Pupil Needs	No change	Trial Edition Outlined	Trial Edition to be outlined

Figure 4 is a summary of the proposed and actual status of the 28 module topics chosen for development during this year.

Figure 4

	Proposed	Present Progress
1st Experimental Edition Completed	6	12
Trial Edition Ready for Pilot Testing	18	2
Trial Edition Outlined	3	9
(Module Topics Discontinued)		5** ***
	N = 27	28*

Note: (*) One module, "Organizing to Investigate," by Butts has been added to the sequence.

(**) Two of Dr. Gibb's modules have been combined into one package.

(***) With the reassignment of Dr. Koran, four of his proposed module topics will be discontinued as no development work has been completed on them.

The Mathematics-Science Teacher Education Program

Improved programs for mathematics and science in the public schools have a potential for a major change in education. Associated with the development of the curriculum materials are new programs for teachers which have been widely used in summer institutes and inservice classes during the school year.

One set of recommendations for the mathematics and science preparation of preservice education of elementary teachers has been identified by the AAAS -- National Association of State Directors of Teacher Education and Certification Guidelines. These recommendations, which also reflect the Committee on Undergraduate Programs in Mathematics, probably represent the most satisfactory course recommendations that have been proposed to date. However, these Guidelines themselves are not current with the need that exists.

Both new mathematics and science curricula and organizational changes in the elementary schools are demanding new competencies of elementary school teachers. These competencies include knowledge of subject matter, interest in the subject and methodology of teaching. To cope with these demands, the preservice education of the teacher must recognize that today's schools require individuals with training far different from that which existed 30 or even ten years ago. For example, team teaching or cooperative planning requires a member of the team with both knowledge and confidence in the subject area. A mathematics-science member of this team is essential for the success of the program. But such qualified people are difficult to locate. Furthermore, due to expanded student populations, many communities have had to move their upper elementary grades to a departmentalized situation combined with a junior high school or to establish a middle school. This demands a specialist in mathematics-science who has an elementary certificate. Discussions with many school administrators eloquently illustrate the lack of responsiveness of teacher education programs in preparing such an individual.

Under the present program of preservice education, too often the prospective teachers are required to take only a short sequence in science or mathematics and the option of a one-semester methods course in the teaching of science or mathematics. He may or may not have the opportunity to teach either of the subjects in a student teaching assignment. The science course is usually a course in biology as a part of a liberal education requirement. Sometimes it includes a course in physics, chemistry or geology. The mathematics courses are usually studies in the real number system of nonmetric geometry, which provides only a background in the mathematics context in the elementary school and does not provide a purpose for developing mathematics concepts for children. Thus, the prospective teacher's chance of being adequately prepared to teach one of the new elementary school science programs or to teach one of the new mathematics programs is not very promising. The time limitation of undergraduate professional preparation of prospective elementary school teachers with particular potential in the teaching of mathematics and science provides one of the compelling arguments for the reorganization of teacher education experiences.

Experience for the education of elementary school teachers prompted the investigators to first look at the development of the program for a mathematics-science specialist. We expected that the development of such a program would require a background in mathematics and science and opportunities for teaching in these areas. It also required a general background in the understanding of the total elementary school curriculum, child development and ways children learn. To do this, members of the faculty team were selected from mathematics, science, general education, educational psychology and assessment.

The general goals of the Mathematics-Science Teacher Education Program are:

1. To develop a program in which students can reach a level of competence and confidence in mathematics, science and the teaching of mathematics and science;

2. To enable the prospective teacher to study science and mathematics in a way in which he is to teach science and mathematics to his future pupils but at an adult learning level;

3. To prepare the prospective teacher to teach any of the experimental or new programs in elementary school science or mathematics;

4. To prepare the prospective teacher to teach science or mathematics in schools with a variety of organizational patterns;

5. To create in the prospective teacher a motivation to continue his study in science and mathematics after graduation in order to aid his needs in teaching and his needs as a citizen.

With the competencies of the prospective mathematics-science teacher in the elementary school defined in terms of what they should be able to do as they begin their teaching, a program that prepares them to do these tasks had to be planned. Such a program included the study of science and mathematics topics that are appropriate for the level of education of the prospective teacher and which provide the necessary background for the science and mathematics concepts included in elementary school programs. The program emphasized the interrelatedness of skills in mathematics and science and those in reading and language arts. The sequence provided for group and individual research projects, individual study and reading, individualized instruction patterned after the Purdue Plan in botany, the use of films, video tape and feedback.

The program focused on practical behavioral analysis of teaching and learning, including practice in observing and analysis of a variety of models of teaching and practice in the analysis of the conditions of teaching including the role of the student expected by society. Further, as part of this program, practice was provided in establishing the pre-conditions of learning; the essentials of classroom management, including the teacher's personal mannerisms; communication skills; interaction skills; skills in confronting, and identifying where students are and strategies for maintaining an atmosphere for learning. Organizing instruction including recognition of the strengths and inadequacies of a novice teacher's academic background, a study of the objectives, selecting of content and analysis of the impact of the experience on the individual student were part of the program.

The prospective teacher was required to study new science and mathematics courses prepared for elementary schools and to teach parts of these courses to both small groups and to classes of children.

During the pilot year, six faculty members worked as a team to teach 27 of the 30 credit hours in the Teacher Education Program to 24 elementary education majors. Of the six-member faculty team, three were members of the Mathematics-Science Module Building Group. Although six individual faculty members were involved, the emphasis was on the team approach with each member of the team contributing equally and having been selected because of his unique specialization and interest. The Mathematics-Science Teacher Education Program entailed an alteration of the scheduling of courses. It also included more work time for both faculty members and students. The three-hour courses included in the program were: science methods, mathematics methods, language arts methods as well as the educational psychology course, directed observation and student teaching. The mathematics and science methods courses acted as another source for the tryout of instructional modules.

Due to the structure and the philosophy of the Mathematics-Science Teacher Education Program, not only were students involved in the instructional experiences designed to facilitate acquisition of specific behaviors in the college sequence, but also the students had an opportunity to apply these newly acquired behaviors in the school sequence situation. The Mathematics-Science students were able to immediately apply their behaviors in a school sequence situation. Thus, it was possible to secure the first direct effect of modules on the preservice preparation of elementary education majors.

Student acquisition of specified behaviors at the college sequence is only a partial goal of the Mathematics-Science Module Building Group. Follow-through with the participants in the Mathematics-Science Teacher Education Program during their first phase in the school sequence is considered to be essential. This follow-through will be done with a selected sample of the students who are participants in the pilot of the program.

The enthusiastic response of this program by both students and cooperating teachers has resulted in it being repeated during the 1969-70 school year. Feedback from students and cooperating teachers has led to a modification of the plan of the two semesters as illustrated in Figure 5.

Further, as a result of the success of the Mathematics-Science Teacher Education Program, there is already a waiting list of students interested in participating in the second year. An additional course and faculty member have been added to the program which will now encompass the entire 30 hours of the professional sequence.

Another filter that is to receive added emphasis during the next year by the Mathematics-Science Module Building Group in a college sequence is the conditions filter. Most of the modules at this time are designed to be presented in a class component of 25 to 30 students by an instructor. During the next year plans are underway to present one of the modules by computer-assisted instruction. Audiotutorial stations are also being designed as instructor elements. These proposed changes in the instructor filter will also entail alterations in the interactions filter as well.

Evaluation Studies

One of the main purposes in initiating the Mathematics-Science Teacher Education Program was the opportunity to conduct focal plane evaluation that emphasizes the changes that occur between F_1 and F_2. The evaluation studies are designed to answer these questions:

1. What differences in concern are exhibited by the first semester treatment group and the first semester no treatment group at the pre-student teaching experience?

2. What differences in concern are exhibited by the first semester treatment group and the first semester no treatment group at the end of student teaching in the second semester?

3. What differences occur between the first semester treatment group and the first semester no treatment group from the beginning of student teaching to the end of student teaching in the second semester?

4. What differences in attitude are observable between the first semester treatment group and the first semester no treatment group at the beginning of student teaching in the second semester?

Figure 5

MATHEMATICS-SCIENCE TEACHER EDUCATION PROGRAM -- 1969-1970

Sept. 22 Experience in the School
2 weeks Purpose: To see myself as a teacher.

	M	T	W	T	F
8:00	Organizational Coffee	Visit School	Low Ratio Teaching	Analysis of the Classroom	Visit School
10:30	Visit School	↓	↓	↓	↓
2:00	Description of Experiences	Description of Experiences	↓	↓	Description of Results
4:00	↓	↓	↓	↓	↓

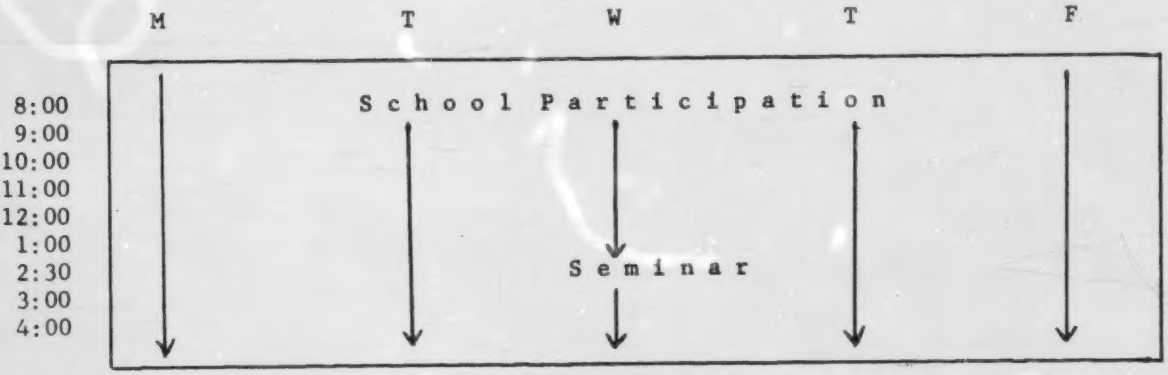
8:00	Reading and Strategies for Observing	Science and Strategies for Observing	Mathematics and Strategies for Observing	Language Arts and Strategies for Observing	Strategies for Observing Children
10:00	Observation	Observation	Observation	Observation	Observation
2:00	Analysis of Observation	Analysis of Observation	Analysis of Observation	Analysis of Observation	Analysis of Observation
4:00	↓	↓	↓	↓	↓

Oct. 6 Methods of Teaching I
5 weeks Purpose: Emphasis on small group interaction of teacher and child; initial experience with instructional context, instructional design.

	M	T	W	T	F
8:00	Science	Reading	Science	Reading	Science
9:00	↓	↓	↓	↓	↓
10:00	Ed. Psy.		Ed. Psy.		Ed. Psy.
11:00	↓	?	↓	?	↓
12:00	↓		↓		↓
1:00	Classroom Visitation, Low Ratio Teaching				
2:00	↓	↓	↓	↓	↓
3:00					
4:00	↓	↓	↓	↓	↓

Figure 5

Nov. 10 Experience the Classroom (Instructional Context)
7 weeks Purpose: Emphasis on application of strategies for interacting with children and planning of instruction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8:00
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10:00
11:00
12:00
1:00
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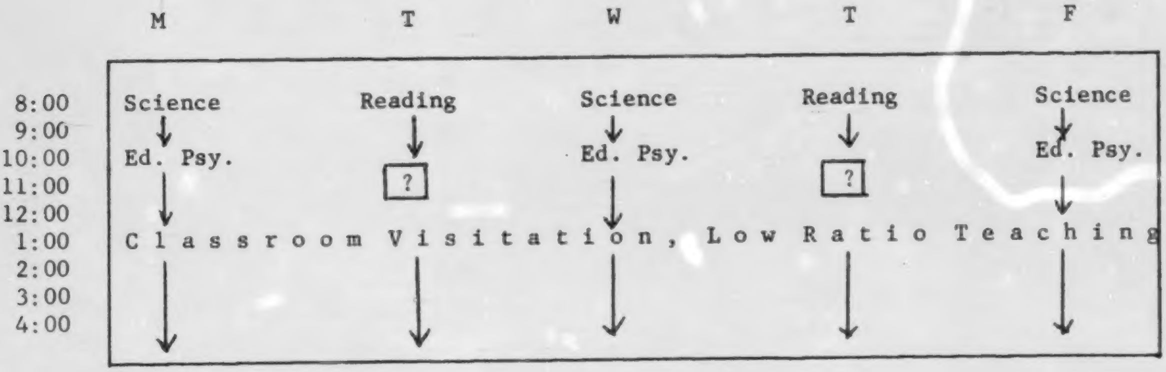
4:00
School Participation
Seminar

Jan. 6 Methods of Teaching II
1 week Purpose: Resolve earlier concerns about teacher-student interaction and instructional design; initiate activities related to teaching behavior.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Science
Reading
Science
Reading
Science
Ed. Psy.
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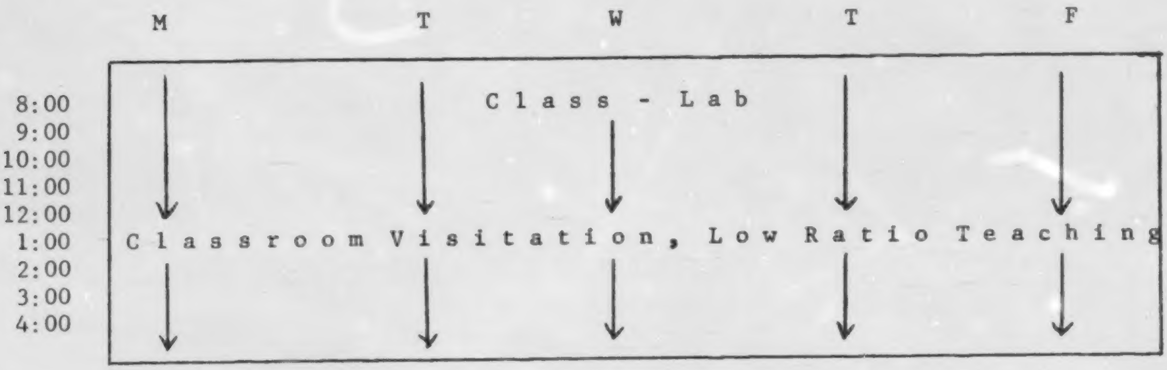
Ed. Psy.
Classroom Visitation, Low Ratio Teaching

Jan. 13 Mathematics Methods
3 weeks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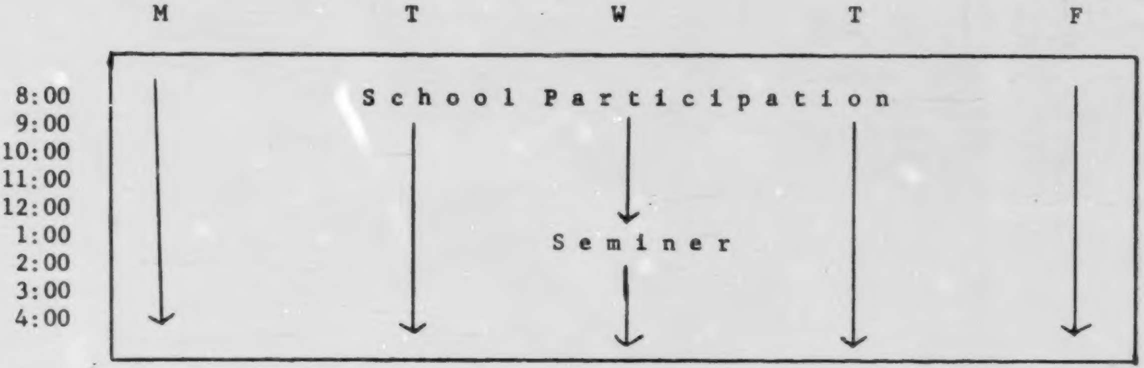
Class - Lab
Classroom Visitation, Low Ratio Teaching

Figure 5

Feb. 9 Experience the Classroom
10 weeks Purpose: Extend experience and application levels to responsibility of the instructional context.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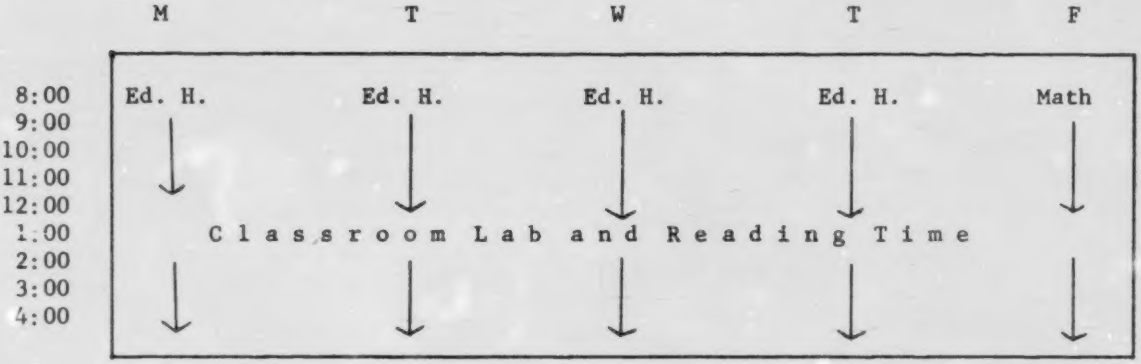
School Participation
Seminar

April 20 Methods of Teaching III
3 weeks Purpose: Emphasis on higher level concerns of the instructional context -- teaching behavior, classroom management, and analysis of socio-organizational context.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Ed. H.
Ed. H.
Ed. H.
Ed. H.
Math
Classroom Lab and Reading Time

5. What changes in attitude occurred in the first semester treatment group from the beginning of their course content to the end of their first in-school experience and the beginning of their student teaching experience in the second semester?

6. What indices of teaching behavior exist in the low-ratio teaching session and how are they related to the concerns, attitude, and pupil observation ratings of teaching?

7. What indices of teaching behavior exist in the classroom teaching episode and how are these related to concerns, attitude and pupil observation ratings?

Data to be used in securing answers to these questions include video tapes, which were made in one-to-one low-ratio teaching in October, one-to-two low-ratio teaching in October, classroom teaching in December and classroom teaching in April. In addition, Directed Imagination Tests and the all-college battery information is available on the students. Concerns tests were administered at the beginning of the professional sequence, at the end of the first four weeks of content, at the end of the first in-school experience, at the beginning of the student teaching experience and at the end of the student teaching experience. The Semantic Differential was used to secure information on the students' attitudes; these were administered at the beginning of the program, at the end of the first in-school experience, and at the end of the student teaching experience. Pupil Observation Rating Forms are available for the treatment group at the end of the first in-school experience. Audio tapes of test interpretations and video-taped feedback will also be analyzed for each student.

The written reports of these studies are expected to be completed by August 30. This series will include four reports:

Title of Report	Authored By
1. Analysis of Concerns of Prospective Elementary Teachers	Hall, Schmidt, Butts, Gibb, Newlove and Rutherford
2. Analysis of Attitudes of Preservice Teachers	Hall, Schmidt, Butts, Gibb and Rutherford
3. Analysis of Teaching Behavior of Preservice Elementary Teachers	Hall, Schmidt, Butts, Gibb and Rutherford
4. The Four Case Studies	Hall, Schmidt, Butts, Gibb and Rutherford

College Educator Leadership Conference

The College Educators Leadership Conference has been jointly sponsored by the R & D Center and the National Science Foundation. This conference was designed for two purposes:

1. To assist instructors at the college level to change, and

2. To utilize their institutions as field tests for the first experimental edition.

The program of the Leadership Conference was designed primarily for college educators who represent a potential pool of key research people in implementation of recently developed science curricula both at the elementary school and college levels. Participants were college educators selected because they have a commitment to working with both inservice and preservice teachers in the improvement of science instruction.

Prior to the conference in June, 1969, these college educators met for a one-day planning session during which they identified the agenda for the conference. The conference itself was a three-week session designed to include a study of recently developed curricula and their related teacher education programs. During the three weeks the participants had the opportunity to acquire skills and to demonstrate the use of these skills in teacher education programs. A third portion of this conference used the back-home practical experience in which the participants had a commitment to work with at least three groups of teachers either at the inservice or preservice level with each of the sequence of 12 modules.

Participants had the opportunity to gain familiarity with curriculum innovations such as Science - A Process Approach, the Science Curriculum Improvement Study and the Elementary Science Study and their related materials by working in the laboratory and working with children in elementary school classrooms. The participants also gave careful attention to the psychological basis upon which these materials were structured and the relevance of this basis to the learning experiences of children. In addition, the participants were involved in the analysis of the process of change and how it relates to inservice and preservice teacher behavior. Basic to the philosophy of the Mathematics-Science Module Building Group was the premise that there is a greater probability that one feels positive toward the things that one knows. There is an equal likelihood that one will be apprehensive about those things that are unknown or unfamiliar to him. Based on these two premises, the agenda for the conference was designed to provide the college educators with experiences in all three categories of behavior which are identified in the overall rationale of the educational encounter, outlined earlier in this chapter.

The specific activities related to the category of "Task Confidence" are those experiences in which the college educator was both a student and member of the conference staff, the instructor; for example, "comparing observations" or "organizing to investigate."

Opportunities to design instruction and to utilize other materials which have been previously designed for working with children are an illustration of the second category. The session of low-ratio teaching in which the college educators planned for and taught small groups of children at Casis Elementary School is one example. Another dimension of this category was the scheduled opportunities for them to plan and teach undergraduates in the summer school courses on campus.

The task of analyzing teacher behavior is an illustration of the third category. This analysis includes tape recordings of their teaching children and teaching undergraduates. In addition to the kinds of sessions, the organization of the individual session illustrates a method of teaching in which the individual participant has the opportunity to identify for himself what he knows and that which he does not know. We have found that through this pre-appraisal experience, it is possible for the individual himself to make a significant contribution in terms of a mental set of new experiences. In this way, the traditional routine of trying to second guess what is the purpose of instruction has been drastically changed.

Evaluation studies were also initiated to ascertain what changes in pre-, post-conference behavior of the college educator would be related to specific changes in pre-, post-behavior change during a semester with the students with which the college educator worked.

Reports of Research

The following reports of research have been completed or are anticipated to be completed by August 30.

Butts, David and Raun, Chester. "A Study of Teacher Change." R & D Report Series #5.

Butts, David and Raun, Chester. "A Study in Teacher Attitude Change." R & D Report Series #6.

White, Marjorie; Raun, Chester and Butts, David. "A Study of Contrasting Patterns of Inservice Education." R & D Report Series #7.

Raun, Chester and Butts, David. "The Relationship Between the Strategies of Inquiry in Science and Student Cognitive and Affective Behavioral Change." R & D Report Series #8.

McGlathery, Glenn and Butts, David. "An Assessment of Science Achievement of Five- and Six-Year-Old Students of Contrasting Socio-Economic Backgrounds." R & D Report Series #9.

Steinbach, Alan and Butts, David. "A Comparative Study of the Effect of Practice with Elementary Children or with Peers in the Science Methods Course." R & D Report Series #10.

Breit, Frank and Butts, David. "A Comparison of the Effectiveness of an Inservice Program and a Preservice Program in Developing Certain Teaching Competencies." R & D Report Series #11.

Bohn, Coylene; Raun, Chester and Butts, David. "A Study of Teacher Characteristics as Predictors in the Successful Implementation of an Innovative Curriculum." R & D Report Series #12.

Buehner, Barbara. "Using CAI to Develop a Concept of Place Value." R & D Report Series (in press).

Sax, Suzanne. "The Development and Feasibility of a CAI Program on Multiplication in the Elementary School." R & D Report Series (in press).

Hall, Gene. "The Instrument for the Analysis of Science Teaching--A System for Measuring Teaching Behavior." R & D Report Series #18.

Butts, David; Hall, Gene and Irwin, Scott. "A Study of Inservice Education as a Means for Changing Teaching Behavior." R & D Report in Progress.

Hall, Gene; Schmidt, Linda; Butts, David; Gibb, Glenadine; Newlove, Beulah and Rutherford, W. "Analysis of Concerns of Prospective Elementary Teachers." R & D Report in Progress.

Hall, Gene; Schmidt, Linda; Butts, David; Gibb, Glenadine and Rutherford, W. "Analysis of Attitudes of Preservice Teachers." R & D Report in Progress.

Hall, Gene; Schmidt, Linda; Butts, David; Gibb, Glenadine and Rutherford, W. "Analysis of Teaching Behavior of Preservice Elementary Teachers." R & D Report in Progress.

Schmidt, Linda; Hall, Gene; Butts, David; Gibb, Glenadine and Rutherford, W. "The Four Case Studies of a Preservice Teacher Education Program." R & D Report in Progress.

Butts, D. P.; Jones, H. L. and Cain, R. W. "The Relationship Between Student Problem Solving and Teacher Ratings."

Butts, D. P. and Jones, H. L. "Inquiry Training and Problem Solving in Elementary School Children."

Butts, David and Jones, H. L. "The Development of the TAB Test."

Butts, David P. "The Relationship Between Classroom Experiences and Certain Student Characteristics." R & D Mimeograph paper.

Butts, D. P. "A Report on the Instructional Decisions Test." R & D Report in Progress.

Raun, Chester and Butts, D. P. "The Relationship Between Inservice Teacher Education and Changes in Teacher Science Competence." R & D Report in Progress.

Butts, D. P. "A Study of Student Science Behavior." R & D Report in Progress.

Butts, D. P.; Raun, C. and Steinbach, A. "An Analysis of Behavior Changes in Preservice Teacher Education." R & D Report in Progress.

Ashley, J. and Butts, D. "A Study of the Impact of an Inservice Education Program on Teacher Education." R & D Report in Progress.

Butts, D. P. "The Longevity of Teaching Behavior Change: A Replication Study." R & D Report in Progress.

Hall, Gene and Butts, David. "Factors Common to Classroom Observation Instruments: A Correlation Study of the Classroom Observation Rating Form, The Instrument for the Analysis of Science Teaching and the Teacher Performance Completion Scale." R & D Report in Progress.

04.0203

LANGUAGE ARTS
MODULE BUILDING

L. Jean York

The principal investigator of the Language Arts Module Building group, Dr. L. Jean York, has, during her two years' experience with the R & D Center, worked in several projects. This report will summarize that investigator's R & D experiences, leading toward Language Arts Module Building activities.

Dr. York's first assignment was that of Curriculum Coordinator of the Team Teaching Project at Brentwood Elementary School in Austin, beginning in September, 1967. During the year in which she was involved with the project, funding became jeopardized because the research was complicated by having Title III, R & D Center personnel and Austin Public School personnel all attempting to bring about divergent kinds of changes in teacher and pupil behavior.

During the second semester of that first year, Dr. York was placed on Task Force II of the R & D Center, representing the language arts area of the curriculum. In this capacity she met frequently with task force members and public school personnel. The focus of the Task Force II effort was to identify areas of teacher competency and areas of lack of teacher competency in the subject matter areas of science, mathematics, social studies and language arts. As an outgrowth of these meetings, a module, "Identifying Critical Aspects of the Teacher's Role," was written and consulting assistance was also given to Mrs. Johnnie Boone and Mrs. Hazel Forrester for modules under their authorship.

With the evolution of the modular teacher education program approach in the Center, Task Force II was redesigned and emphasis shifted to the writing of specific modules in each of the curriculum content areas. The Language Arts modules, which were the responsibility of this investigator, were planned with team teaching of the language arts as a focus. This topic was chosen because of the investigator's professional background in the two areas. As the writing progressed, the fact became apparent that teachers could not be taught team teaching in a specific subject, language arts, until they first understood team teaching as an instructional facilitator of individualized instruction. Hence, a list of ten modules was outlined, with the intention that these provide the necessary knowledge of team teaching.

Continued evolution of the modular concept saw several changes in emphasis of tone, style and criteria for the module design. The first change was from a prose style of presentation to a style that emphasized a greater variety of innovative materials. The second shift was one that continued the emphasis on innovative techniques but made use of programmed learning and self-pacing for the individual learner. The most recent shift came about as early modules were field tested and the evaluation techniques for pretesting and posttesting and choosing of objectives for instructional acts became more meaningful.

During her second year with the Center, Dr. York also worked with the Conceptual Design Committee. In these meetings, she made contributions from her experience with the language arts and curriculum development.

The Team Teaching Modules

As a result of the evolution factors listed above, as well as further study of the specific module design to be employed for Team Teaching, the originally suggested list of ten modules was abbreviated to seven. Four of these have been completed. The module titles follow.

1. "The Background, Philosophy and Purposes of Team Teaching"
2. "The Roles of the Professional and Paraprofessional Personnel in Team Teaching"
3. "Grouping Children for Instruction in Team Teaching"*
4. "Materials and Resources Needed for Team Teaching and Individualized Instruction"*
5. "Evaluation of Team Teaching and Children's Continuous Progress"*
6. "Prerequisites for Good Planning Sessions in Team Teaching"
7. "Team Teaching as a Facilitator of the Nongraded School"

*Module incomplete, June 30, 1969

Those modules that have been completed fit into the conceptual design in several ways. If one were to think of teacher education as a process of making teachers aware of problems in teaching (awakening concerns) and then providing instructional material and acts to solve these problems (dispelling concerns), these modules could be considered as means of awakening the teachers' concerns about diagnosing and preparing instructional procedures for the individual child.

Teacher education must provide educational experience that will be related to the distal situation of teachers in the public schools. These modules also fit into the proximal position of awakening concerns of preservice teachers and into the distal position for aiding the inservice teacher in the public school.

In conclusion, these modules have been designed for mass consumption by both preservice and inservice teachers. Each includes a Study Manual that is aimed at meeting the needs of all teachers of many different backgrounds and levels of education and experience who might be involved in team teaching. The modules might also be used by individual teachers who are hired to accept positions on a team wherein the team has been working for some length of time. The modules demonstrate some of the basic concepts, principles and techniques necessary for successful team teaching. Utilized in this process are individualized learning techniques, video tapes, motion pictures, review of research and a bibliography of related articles.

The modules incorporate the ideas of self-selection of content, methodology, self-pacing and other individualized instructional methods, thus providing an opportunity for experiencing as a learner the effect of the teacher role and simultaneously learning to understand and improve performance in that role of facilitator of learning and creator of materials for learning.

Future Plans

In September, 1969, the group will begin work on language arts modules and will attempt to obtain feedback and evaluation of the team teaching modules. The year should include the following activities:

1. Trying out the team teaching modules with public schools in diverse parts of the United States,

2. Trying out the modules with preservice teachers on the University campus and other campuses,

3. Eliciting comments from such people as Goodland and Anderson, who are knowledgeable in the field of team teaching,

4. Eliciting comments from R & D Center personnel and Policy and Planning Committee, and

5. Preparing language arts modules.

04.0204

SOCIAL STUDIES
MODULE BUILDING

Clyde I. Martin

This project has two main goals:

1. To develop materials for a social studies program in teacher education to be used with prospective elementary teachers at three different levels of their professional preparation, and

2. to design instruments for the evaluation of the program and to use them in pilot programs.

The design for the social studies program is a product of some five years of experimentation conducted by the principal investigator. Continued development of the program brought it under R & D Center support in July, 1968. Following are the accomplishments of the project since that date.

Program Progress

Protocol materials were designed for three dimensions of the social studies programs. These dimensions included political science, anthropology and history. The protocols were in the form of prototype topics for grades one through six in each dimension. Video tapes, 30 minutes in length, were made of student teachers working with children in the solution of a problem from each topic in the three dimensions. Some 58 tapes were made.

These same prototype topics in political science and in anthropology were taught by two different groups of teachers working in two different populations. Topics from the political science dimension, for example, were taught in a Mexican-American school by one group of student teachers and in two middle-class Anglo schools by another group. In both instances, modifications of the materials were made according to the capabilities of the children involved.

An Analysis Guide was created for use with the video tapes. Because all of the social studies materials were developed according to the same set of basic assumptions, the Guide was appropriate for analysis of all tapes produced for the program.

Each dimension of the social studies program can be used as a separate module in some levels of the teacher education program. At other levels a single video tape might serve as a complete module. In general, the term "module" describes a dimension of a social studies program, consisting of six prototype topics and 12 video tapes from two populations. (The history dimension contains video tapes from one population only--Negro schools.)

Performance behaviors were assigned for each video tape; these were correlated with the inquiry problems contained in the Analysis Guide.

Student teachers analyzed their own performances on the video tapes in feedback sessions, supported by additional analysis from peers, cooperating teachers and College of Education supervisors. In addition to their benefit to the learning teachers, these reactions will be used as formative data for the teacher education program. Similar data were gathered from children's reactions to video tapes made of their own classes. In one of the schools, video tapes were used in inservice faculty groups; here too, reactions were noted.

A User's Manual to be employed with all dimensions or modules was completed. Detailed descriptions of all activities listed here are included in the manual, along with models and illustrative materials.

Each of the completed modules contains:

1. The rationale
2. A description of the populations involved
3. Prototype topics for each grade level in the elementary school
4. Inquiry and performance behaviors for each tape
5. Inquiry for the complete set of tapes so that students might perceive principles or generalizations permeating all tapes
6. A bibliography related to the dimension of social studies projected in the module, for use by prospective teachers.

Each of the video tapes were previewed by the director and a research associate. Development of the Analysis Guide and the definition of performance behaviors resulted from this type of early study. For some unique situations within particular video tapes, additional questions, besides those in the Analysis Guide, were included in the module.

In addition to the program related above, a social studies and science program was designed for five-year-old migrant children, using 42 teachers and aides. Six 30-minute video tapes were made, in which fundamental ideas from five areas--mathematics, science, social studies, art and music--were demonstrated with a group of 20 five-year-old Mexican children. Each teacher appearing in a tape was a highly competent kindergarten teacher. The tapes were used as a laboratory for the 42 teachers and aides. The tapes have also been used in professional education courses in several major colleges and universities, and in two large public school inservice programs. Feedback from these materials holds promise for the education of teachers of kindergarten classes.

Personnel:

Principal investigator:	Dr. Clyde I. Martin
Student teacher supervisor:	Mrs. Josephine Wortham Mrs. Gene Nelson
Research associate:	Miss Sue Gulledge
Secretary:	Mrs. Cheryl Russell

Austin Elementary Schools Participating:

Ortega
Zavala
Brooke
Sims
John B. Winn
Lucy B. Read
Highland Park
Casis

04.0205

ENGLISH AS A *SECOND LANGUAGE* MODULE BUILDING

Marshel Ashley
Pedro I. Cohen

Approximately 40 percent of the Mexican-American population in this country lives in the State of Texas. Most of these people live in socially and economically deprived areas. When their children enter school, they have to follow educational programs geared to the needs of English-speaking children. But the average Mexican-American child speaks little or no English; he, therefore, cannot understand the language of the classroom, he is unable to match the pace of average English-speaking children, and the instruction in the English language that he receives has limited value.

A partial solution to this serious problem seems to be Bilingual Education. This means the use of Spanish and English, together, as mediums of instruction in any or all parts of the school curriculum. Studies conducted by psychologists have shown that, if school policies and other conditions are favorable, bilingual schooling is profitable because it makes for superior educational achievement and for maximum adjustment to the environment.

The purpose of bilingual programs in general is to cultivate in the pupils a clear acceptance and understanding of the dominant Anglo-American culture of the United States, as well as to produce in them a richer and more meaningful realization of the positive values of the Mexican-American's mother tongue and cultural heritage.

The implementation of bilingual programs has the following specified objectives:

1. To develop in children the ability to attain fluency and literacy in English and Spanish by the end of the sixth grade.

2. To make children progress without grade retention and to reach grade level achievement in all subjects of the school curriculum by the end of the sixth grade.

3. To enable the children to understand, speak, read and write correctly in English and in Spanish, and to function academically and socially in both languages.

The Assignment

The Research and Development Center for Teacher Education took over a program that was aimed at the unique need for bilingual teachers who could work effectively with Spanish-speaking children in the Southwest. Pursuant to this program, the English As a Second Language Module Building Group (also known as the Bilingual Staff Development Section) began operations on February 15, 1969. The scope of its operations included the following functions:

1. Develop a conceptual model for an inservice education program to train teachers to utilize the Southwest Educational Development Laboratory's (SEDL) Bilingual Instructional Program, Grades 1-6, and to relate this model to the school's instructional programs for these grades.
2. Design and pilot test a program to train bilingual teachers to utilize the above materials.
3. Produce sufficient self-instructional modules to implement the training of teachers.
4. Produce the supporting instructional media needed in this training.
5. Produce specifications and instructions to be utilized in carrying out the training program.

To these ends, the group addressed itself to the following areas of research: (1) derivations of a theoretical rationale for the implementation of SEDL materials, Grades 1-6; (2) the training of inservice teachers for bilingual education and (3) the elaboration of sufficient self-instructional modules for the implementation of SEDL materials in Grades 1-6.

The period covered in this report is from the inception of the project in February, 1969, to June 30, 1969. During that period the group devoted considerable time and attention to an evaluation of goals and of the program. Research and development efforts of the group have been focused on the training of inservice bilingual teachers, and on the writing of a rationale for the implementation of the bilingual program as it is conceptualized by SEDL.

During this period, the assignment was supported by a continuing interchange between members of the group and the larger educational community at the University and through interviews and personal correspondence with knowledgeable people at institutions across the country. In informal meetings, discussions and actual visits to classrooms, valuable contributions were made by teachers, principals and supervisors of the Austin Independent School District, the San Antonio Independent School District and the Del Valle Independent School District.

Meetings with the Bilingual Staff Development Advisory Committee, the Language Research Staff members of the Department of Curriculum and Instruction in the College of Education and with faculties from the Foreign Language Education Center and other staff members of the R & D Center's Instructional Design Unit provided further opportunities for fruitful interchange of ideas of great value.

Accomplishments and Outgrowths

Most activities are closely related to the overall work of the R & D Center and to the research and development concept. As a result, research assignments were set up among staff members on differing areas, out of which have emerged a series of relatively brief instructional modules that provide flexible and individualized training to different kinds of bilingual teachers. Concrete accomplishments of the staff in their specific areas of research are the following modules to date:

Dr. Pedro I. Cohen (Linguistics and Language Teaching and Learning)

1. Linguistic Views and Assumptions on Second Language Teaching and Learning
2. A Rationale for Modeling and Drill Management Teaching Strategies Employed in Bilingual Programs
3. Developing an Awareness of Phonological Interferences

Dr. Mark Seng (Learning Laws and Theories)

1. Learning Theories and Intellectual Development
2. Verbal Rewards

Dr. Margaret Davidson (Sociology and Anthropology)

1. Sociological and Anthropological Considerations for Bilingual Education
2. Experience Referents
3. Teacher/Pupil Talk Patterns

Mrs. Nancy Lewis (Psychology)

1. Psychological Bases for Bilingual Education in the Primary Grades

2. Disruption, Disengagements, and Behavior Control

3. The Self-Concept and Its Importance in Bilingual Education

Advisory Committee

Dr. Elizabeth Ott, Director
Bilingual Education Program
Southwest Educational Development Laboratory

Dr. Robert Randall, Associate Director
Program Planning and Evaluation
Southwest Educational Development Laboratory

Mr. Vance Littleton
Program Management Specialist
Southwest Educational Development Laboratory

Dr. Thomas Horn, Chairman
Curriculum and Instruction
The University of Texas at Austin

Dr. Joseph Michel, Director
Foreign Language Education Center
The University of Texas at Austin

Dr. Pedro I. Cohen, Coordinator
Bilingual Staff Development
Research and Development Center
for Teacher Education
The University of Texas at Austin

Mr. Marshel Ashley, Director
Bilingual Staff Development
Research and Development Center
for Teacher Education
The University of Texas at Austin

Dr. Victor Bunderson, Director
Computer Assisted Instruction Laboratory
The University of Texas at Austin

Dr. Michal Clark, Director
Learning Technology Division
The Research and Development Center
for Teacher Education
The University of Texas at Austin

Miss Carmen Gamboa, Coordinator
Intermediate Language Arts and Secondary Reading
Austin Independent School District

04.0304

DECISION MAKING FACTORS IN PRESERVICE TEACHERS' CHOICE OF TEACHING STRATEGIES

Edmund T. Emmer
Thomas Good

Factors influencing preservice teachers' preference for expository and discovery styles in micro-teaching were examined in this study. Initial strength of preference was compared to preference after different feedback expectations had been induced.

Four groups of 25 preservice teachers participated, each group receiving a different expectation of feedback.

Teachers in each group were told that they were to teach a lesson in which they used either an expository or discovery style. In Group 1, feedback would be provided about student interest and motivation; in Group 2, feedback would be provided about student understanding; in Group 3, about the extent to which their teaching behavior was appropriate for the style they chose; Group 4 was a control group and was given no expectation of feedback.

Data collected include:

1. Preferences for expository and discovery teaching styles
2. Measures of understanding of the two teaching styles
3. Measures of attitudinal factors related to preference
4. Ratings and codings of the lessons

As of June 30, 1969, all data are collected and analysis has begun. Preliminary findings indicate that when feedback is expected to be directed toward the appropriateness of the teacher's behavior for the chosen teaching style, a marked shift in preference for expository teaching occurs. In the other feedback conditions there is no change in preference.

05.

TEAM TEACHING

June Gallessich
Ira Iscoe

The purpose of this project has been to identify and clarify as fully as possible the crucial issue for pupils, teachers and student teachers in the team teaching situation.

Five team-teaching schools were studied, two of them intensively, beginning in 1965. Pupil adjustment and achievement were measured and student teacher reactions were obtained quantitatively and through video-taped interviews. Teams of teachers were videotaped during planning sessions and were interviewed to identify their concerns and effectiveness in teamwork. Pre and posttests were used to measure teacher attitudes toward team teaching and their decision-making styles. A teacher-rating scale was developed and employed to identify adequate and inadequate teachers and student teachers and the relationship between teaching effectiveness and other measures.

Data have been analyzed and the final report is now being written. This report is to be completed by September 1, 1969.

SUMMARY AND PROJECTION

SUMMARY AND PROJECTION

O. H. Bown

Building on a long tradition of research and innovation in the preparation of teachers, the Research and Development Center for Teacher Education was established as a functioning partnership between The University of Texas at Austin, the Texas Education Agency and the Austin Public Schools. The national network of Centers and Laboratories was established to design and engineer significant improvement in American education through research-guided development and development-oriented research. Our Center, as one arm of that network is evolving a complex and explicitly specified series of learning experiences for prospective and inservice teachers, experience designed to be relevant and challenging to the teacher. Definitive evidence is accumulating that this kind of program is producing teachers who are more open and responsive to the individual needs and learning styles of the children whom they eventually teach, more flexible in their ability to adapt teaching approaches and strategies to the learning process in children and more proficient in designing subject-matter instruction in a way that is relevant and challenging to pupils. The program is built on studies in depth of the developmental process through which young people actually move in becoming a teacher. As such, the program is designed to be responsive to the evolving personal and professional concerns of prospective teachers as they approach active teaching responsibilities. We offer this as an alternative to the transmission of "canned" knowledge to passive recipients.

The program is both personalized and individualized in a continuing effort to fully engage the young teacher in self-initiated and generative learning. Major program emphases include:

(1) the provision of "feedback" to prospective teachers regarding their own personality and teaching-relevant patterns of behavior and interaction;

(2) provision for earlier, active involvement of teacher candidates in teaching situations, either in laboratory or real school settings, as a means of arousing personal and professional concerns in time for the program to resolve the concerns internally and realistically; and

(3) provision of experience for young teachers in designing subject-matter content appropriate to the motivational and cognitive capacities and processes of children of various age levels; the same content being appropriate also to instructional, organizational and motivational

strategies consonant with the learning of different subject matter areas.

The Center engages in basic research designed to test the effects of its various approaches in the education of teachers on teacher personality and teaching behavior and subsequent effects of such personality and behavior on relevant aspects of child motivation, learning and behavior. These efforts are guided by the twin-concerns of seeking approaches having the greatest educational and developmental impact on teachers and which also possess realistic time, cost and personnel requirements, qualifying them for eventual adoption by teacher education institutions across the nation.

The major developmental products of this basic research and experimentation are: (1) a diversified, comprehensive teacher education system composed of instructional modules, each designed to insure achievement of specified behavioral and expressive objectives, and each containing detailed instructional materials and illustrations as well as built-in evaluation procedures; and (2) instructional guides for teacher educators to assist them in implementing, adapting and continuously evaluating and refining the various components of the teacher education system with respect to the particular populations with which they work.

The close functioning relationship of the Center with pre- and inservice teachers on the one hand and with public schools on the other offers some insurance that the instructional approaches being developed will remain responsive to the diverse emerging patterns of organization and the expanding role of the school in meeting critical developmental and educational needs of children and youth in our rapidly changing society.

APPENDICES

APPENDIX B. THE POLICY AND PLANNING BOARD

Allen, Dwight W.
Dean
School of Education
University of Massachusetts

Anderson, Gordon
Chairman
Department of Educational Psychology
College of Education
The University of Texas at Austin

Bown, Oliver H.
Co-Director
R & D Center

Cabe, Ernest W.
Assistant Superintendent
Austin Public Schools

Chandler, B.J.
Dean
School of Education
Northwestern University

Edgar, J.W.
Commissioner of Education
Texas Education Agency

Holtzman, Wayne (chairman)
Dean
College of Education
The University of Texas at Austin

Horn, Thomas
Chairman
Department of Curriculum and Instruction
College of Education
The University of Texas at Austin

Jackson, Philip
Professor of Education and Human Development
Laboratory Nursery School
University of Chicago

Lee, Addison
Director
Science Education Center
The University of Texas at Austin

Peck, Robert F.
Co-Director
R & D Center

Ryans, David G.
Director
Education Research and Development Center
College of Education
University of Hawaii

Wolfe, W.G.
Chairman
Department of Special Education
College of Education
The University of Texas at Austin

APPENDIX C. STAFF RESUMES

ASHLEY, MARSHEL (M.A., Educational Administration, The University of Texas, 1942)
Austin Public Schools Administrator

R & D Position: Director, English as a Second Language Module Building (04.03) and Coordinator of School Input (Consulting) (03.01)

Experience as a public school teacher, elementary and junior high principal, and superintendent; interest in multi-cultural relationships.

BOWN, OLIVER H. (Ph.D., Clinical Psychology, University of Chicago, 1954)
Professor of Education Psychology

R & D Position: Co-Director; Chairman, National Conference of R & D Center Directors, 1969

Professional training and experience in counseling and psychotherapy and in counselor education. During past dozen years, primary interest in the application of therapeutic psychology in experimental programs of teacher education; programmatic research management.

BROPHY, JERE E. (Ph.D., Human Development, University of Chicago, 1967)
Assistant Professor of Educational Psychology

R & D Position: Principle investigator in project currently listed under ITEC (03.0203)

Research interests in child development and early education, particularly cognitive stimulation of the disadvantaged.

BURNS, BILL H. (B.S., mathematics, The University of Texas, 1948)
Educational Specialist II

R & D Position: Coordinator, TV Division (02.02)

Interest in TV techniques in educational research, media presentation and learning, action and reaction to media.

BUTTS, DAVID P. (Ph.D., Science Education, University of Illinois, 1962)
Associate Professor of Curriculum and Instruction

R & D Position: Principal investigator of module-building project (04.0201)

Research interests in curriculum and instruction in elementary science education and teacher training.

CLARK, MICHAL C. (Ph.D., Educational Psychology, Stanford, 1969)
Assistant Professor of Educational Psychology

R & D Position: Coordinator, Learning Technology (Consulting) (03.04)

Interests in the development of educational programs and systems to facilitate human learning; also instructional theory and design as related to program development, especially development of a cybernetic instructional system.

COHEN, PEDRO I. (Ph.D., Foreign Language Education, The University of Texas, 1967)
Research Scientist Associate V

R & D Position: Coordinator, English as a Second Language Module Building (04.03)

Interest in foreign language and bilingual education, teacher training and applied linguistics.

DAVIS, O.L., JR. (Ph.D., Curriculum and Instruction, Peabody College, 1958)
Associate Professor of Curriculum and Instruction

R & D Position: Principal investigator, Teaching Laboratory Module Building (04.0101)

Experience as an elementary and secondary teacher and an elementary school principal; major research interest in laboratory components of teacher education.

EMMER, EDMUND T. (Ph.D., Educational Psychology, University of Michigan, 1967)
Assistant Professor of Educational Psychology

R & D Position: Coordinator, Assessment Behavioral (Consulting) (03.03) and principal investigator in module-building projects (04.1.03, 04.0304)

Research interests in teacher behavior, classroom observation and development of tasks for the Teaching Laboratory.

FULLER, FRANCES F. (Ph.D., Educational Psychology/Counseling Psychology, The University of Texas, 1960)
Associate Professor of Educational Psychology

R & D Position: Coordinator, Personalization (Consulting) (03.02) and principal investigator for related research (03.0201, 03.0202, 03.0303) and principal investigator of module-building projects (04.0301, 04.0303)

Experience as an elementary and secondary public school teacher, secondary school counselor and personnel director in industry and government. Research interests center on affective interactions between counselors and clients, teachers and pupils.

GALLESSICH, JUNE M. (Ph.D., Counseling, School Psychology, The University of Texas, 1967)
Counseling Co-ordinator, Counseling-Psychological Services Center

R & D Position: Principal investigator of Team Teaching project (05.)

Professional experience includes counseling and teaching psychology to elementary education teachers. Primary research interest in consultation, group processes and counseling.

GIBB, E. GLENADINE (Ph.D., Math Education, Wisconsin, 1953)
Professor of Mathematics Education

R & D Position: Principal investigator, Mathematics Module Building (04.0202)

Interests in mathematics education (elementary), learning of mathematics and teacher education.

GOOD, THOMAS L. (Ph.D., Educational Psychology, Indiana University, 1968)
Assistant Professor of Educational Psychology

R & D Position: Coordinator, ITEC project (03.0203)

Primary research interests in teacher behavior, teacher-child interaction and early (preschool) education.

HALL, GENE E. (Ph.D., Science Education, Syracuse University, 1968)
Assistant Professor of Curriculum and Instruction

R & D Position: Principal investigator of module-building project (04.0201)

Research interest in educational change; analysis of teaching behavior and the development of a theory of teaching; methods of teaching science; the development of improved methods of teacher training, especially as these relate to science teaching.

ISCOE, IRA (Ph.D., Child and Clinical Psychology, University of California at Los Angeles, 1951)
Professor of Psychology and Education

R & D Position: Principal investigator of Team Teaching project (05.)

Primary interests in clinical psychology, community mental health and counseling.

KORAN, MARY LOU (Ph.D., Education, Stanford, 1969)
Assistant Professor of Educational Psychology

R & D Position: Principal investigator of projects presently listed with Learning Technology (Consulting) (03.04)

Previous experience as research assistant at the Stanford Center for Research and Development in Teaching (1966-68); primary research interest in learning and individual differences.

LUNDSTEEN, SARA W. (Ph.D., Elementary Curriculum/Educational Psychology, University of California, Berkeley, 1963)
Associate Professor of Curriculum and Instruction

R & D Position: Principal investigator, Thinking/Communication Skills Module Building (04.0104)

Experience as elementary school teacher, college instructor and language arts curriculum consultant; special interest in language arts, especially listening theory and learning.

MARTIN, CLYDE I. (Ph.D., Curriculum and Instruction in Elementary Education, The University of Texas, 1952)
Professor of Curriculum and Instruction

R & D Position: Principal investigator of module-building project (04.0204)

Primary research interest in development of elementary social studies curricula and development of methods for training teacher in the use of such curricula.

MENAKER, SHIRLEY L. (Ph.D., Clinical Psychology, Boston University, 1965)
Assistant Professor of Educational Psychology

R & D Position: Coordinator: Assessment Psychological (Consulting) (03.03) and principal investigator of module-building project (04.03.02)

From 1956-59 she served as assistant to the director of the New Jersey Association of Local Boards of Education. Since 1965, her main interest has been in the field of personality assessment and the relationship of personality characteristics to effective teaching.

MILLETT, GREG B. (Ph.D., Secondary Education Social Studies, Stanford, 1967)
Assistant Professor of Curriculum and Instruction

R & D Position: Principal investigator of module-building project (04.0301)

Primary research interest in teacher education and secondary social studies.

PANKRATZ, HILTON R. (M.Ed., Administrative Education, Southwest Texas State University, 1955)

R & D Position: Assistant Director for Administration

Experience as public school teacher, principal and superintendent; special interests in elementary teacher training and public school administration.

PECK, ROBERT F. (Ph.D., Human Development, University of Chicago, 1951)
Professor of Educational Psychology

R & D Position: Co-Director

Experience as college educator and business consultant in psychology; primary interest in personality assessment and theory, mental health and psychotherapy.

SHEFFIELD, JOHN R. (M.A., Psychology, The University of Texas, 1965)
Social Science Research Associate IV

R & D Position: Coordinator of Data Processing (02.01)

Interested in statistical analyses and experimental design in computer programs.

THOMAS, MICHAEL P., JR. (Ph.D., Educational Administration, Wisconsin, 1960)
Associate Professor of Educational Administration

R & D Position: Project coordinator (04.0102)

Experience as high school teacher (1956-57) and college instructor; research interests in the development of simulation models to fit school systems and the study of characteristics of adaptive innovative organizations.

VELDMAN, DONALD J. (Ph.D., Psychology, The University of Texas, 1960)
Professor of Educational Psychology

R & D Position: Coordinator, Assessment (Consulting) (03.03) and related research projects (03.0301, 03.0302)

Continuously involved in federally supported research projects since 1959, with major emphasis in statistical analysis, psychological assessment and computer applications to research in the behavioral sciences.

WILSON, DAVID A. (B.J., Journalism, The University of Texas, 1966)
Editor III

R & D Position: Coordinator of Dissemination (02.03)

Experience as magazine and newspaper writer and editor, industrial public relations; special interest in writing, editing and graphic arts communication.

YORK, L. JEAN (Ph.D., Education, Indiana University, 1967)
Assistant Professor of Curriculum and Instruction

R & D Position: Principal investigator of module-building project (04.0203)

Experience as public school teacher, principal and district elementary education director; research interest in curriculum innovation, especially in language arts and team teaching.

APPENDIX D. SELECTED PUBLICATIONS

03.02

Authors: Bown, Oliver H.
Richek, H.G.

Title: THE BOWN SELF-REPORT INVENTORY (SRI): A QUICK SCREENING INSTRUMENT FOR MENTAL HEALTH PROFESSIONALS

Date: February, 1967

Publication: Comprehensive Psychiatry, 8 (1), pp. 45-52

Abstract: This article summarizes the development of the Bown Self-Report Inventory (SRI) through three experimental forms resulting in the current form which represents a rather high degree of psychometric refinement. A limited amount of normative, item analysis and reliability data is presented. A portion of the research which has utilized the SRI is briefly summarized attesting to the success of the instrument in differentiating subpopulations hypothesized to vary in phenomenological perceptions and attitudes.

The instrument is short, self-administered, computer scored, and on the basis of available evidence, as efficient as some of the much longer inventories in predictive power. It is suggested for consideration as a screening instrument with a variety of populations where assessment of personal outlook in dimensions which are included in most definitions of "mental health" is desirable.

04.02

Authors: Bohn, Coylene
Butts, David P.
Raun, Chester E.

Title: A STUDY OF TEACHER CHARACTERISTICS AS PREDICTORS IN THE SUCCESSFUL IMPLEMENTATION OF AN INNOVATIVE CURRICULUM

Date: 1968

Publication: R & D Report Series No. 12, originally published as an R & D Center mimeograph as Science Inservice Project Research Report No. 8

Abstract: A change that has taken place in the methodology of teaching science -- a change from teaching to impart specific information to teaching students how to process the information of their experiences -- has led to questioning whether a relationship exists between selected teacher characteristics and success in teaching such a curriculum. Factors of sex, grade level taught, school district, years of teaching experience, and academic preparation in science were examined for significance.

The sample of 110 elementary teachers from six school districts were participants in an inservice teacher education program prior to teaching Science -- A Process Approach.

Student achievement, which was used as an index of teaching success, was assessed by administering the AAAS Competency Measure at the conclusion of each exercise. A minimum of six exercises were taught by each teacher. Multiple linear regression analysis showed that the variables of sex, grade level, school district, years of experience, and hours of science accounted for 45 per cent of the variance in the student achievement score. Of these, sex, grade level, and years of teaching experience made significant independent contributions to predicting teacher success.

04.02

Authors: Butts, David P.
Raun, Chester E.

Title: A STUDY IN TEACHER ATTITUDE CHANGE

Date: 1968

Publication: R & D Report Series No. 6, originally published as an R & D Center mimeograph as Science Inservice Project Research Report No. 2

ERIC No.: ED 021 806

Abstract: Implementing curriculum change requires a careful analysis of those factors which affect its use. Recognizing that all teachers do not experience the same amount of change as a result of a teacher education program, what are the factors that contribute to the greatest attitudinal change? Using change in attitude as a criteria, what contributions are made by a teacher's previous knowledge in science, previous teaching experience, and perception of relevance of the program to the grade level taught or to the school location?

The sample of 60 teachers were from 8 school districts in grades 1-6 with a median of 7.75 years of teaching experience and a median of 11.5 hours of course work in science. Teacher attitudes were measured by the Semantic Differential.

Regression analysis of covariance showed that grade level is a relevant contributor to a positive change in the attitude of primary level teachers but not for those teaching at the intermediate level. Previous course hours in science is also a relevant contributor to more positive attitude for those teachers who have few or no previous hours of science. Pre-teaching experience and location of the school where the teacher teaches do not appear to be relevant contributors to attitude change.

04.02

Authors: Butts, David P.
Raun, Chester E.

Title: A STUDY OF TEACHER CHANGE

Date: 1968

Publication: R & D Report Series No. 5, originally published as an R & D Center mimeograph as Science Inservice Project Research Report No. 1

ERIC No. ED 021 805

Abstract: With the development of curriculum innovations there have also developed parallel programs for teacher education. The question of this study has been, with what type of teacher can a teacher education program be expected to produce the greatest change in both the perception of the innovation and the practice of the innovation? Analysis of related research indicated that some specific dimensions included competency in science, previous formal course work in science, previous teaching experience, and relevance of the teacher education program to classroom practice.

The sample included 19 teachers, grades one through six, in a school of predominantly middle-class Anglo children. The mean of the years of teaching experience for the group was 11.2 years while the mean of the course hours in science was 13.6 hours. A pre-post test design was employed at the beginning and end of the teacher education program to assess perception of the innovation, practice of the innovation and competence in science.

Analysis of inter-correlations indicates that the dimensions which are significantly related to a change in a teacher's perception of a curriculum innovation include competency in science, previous hours in science, and previous teaching experience. The study appears to suggest that a teacher education program can be expected to produce greatest change in perception of the innovation with a teacher who has a number of years of teaching experience but who has few hours of previous science courses. Analysis also indicates that the competency in science of a teacher affects change in the teacher's practice of the innovation.

04.02

Authors: Butts, David P.
Raun, Chester E.

Title: THE RELATIONSHIP BETWEEN THE STRATEGIES OF INQUIRY IN SCIENCE AND STUDENT COGNITIVE AND AFFECTIVE BEHAVIORAL CHANGE

Date: 1968

Publication: R & D Report Series No. 8, originally published as an R & D Center mimeograph as Science Inservice Project Research Report No. 4

Abstract: Examination of the learning situation might suggest that if exposed to situations which focus on inquiry and student involvement, certain changes should occur in student cognitive and affective behaviors as a result of interacting with the strategies of inquiry of a curriculum.

Behavioral factors selected for study included problem solving, divergent thinking, tested intelligence, achievement, attending, and attitude toward science and scientists. From the curriculum materials of Science - A Process Approach, four strategies of inquiry in science were selected for evaluation: classifying, observing, using number relations, and recognizing and using space/time relations.

A sample of 95 regularly enrolled 4th, 5th and 6th grade students were utilized to test the hypothesis that children's performance in the strategies of inquiry in science result in observable and measurable changes in selected factors of cognitive and affective behavior. These students received five months of instruction in the strategies of inquiry.

Analysis by multiple linear regression indicated that the most efficient strategy of inquiry for bringing about behavioral change was that of "using numbers" followed by "classifying," "space/time relations," and "observing." There appeared to be no consistent pattern among grades and no sex differences in the relationship of the strategies of inquiry to behavior change. Apparently no one of the strategies of inquiry in science can be used to predict behavioral change in all of the behavioral criterion. This would indicate the specificity of the inquiry strategies to various dimensions of cognitive behavior.

04.01

Authors: Davis, O. L., Jr.
Smoot, B. R.

Title: EFFECTS ON THE VERBAL TEACHING BEHAVIORS OF BEGINNING SECONDARY TEACHER CANDIDATES' PARTICIPATION IN A PROGRAM OF LABORATORY TEACHING

Date: February, 1969

Publication: R & D Report Series No. 2, reprint of paper delivered at the convention of the American Educational Research Association, Los Angeles, California, February, 1969.

Abstract: 140 secondary teacher candidates were divided into two groups, 85 enrolled in three sections of the first course in teaching at The University of Texas at Austin which incorporated the Teaching Laboratory component. 55 subjects enrolled in three sections of the same course without the Teaching Laboratory component. Students in both groups were tested pre and post. Criterion were measured on the Laboratory Observation Schedule and Record (LOScAR), which yields 13 category scores and nine ratio scores. Data obtained from live observations of the pre and post teaching tests were subjected to analysis of covariance procedures employing the CDC6600 computer program COVARY. Results showed that teacher candidates' verbal teaching behaviors can be modified in a Teaching Laboratory.

04.01

Author: Davis, O. L., Jr.

Title: LABORATORY COMPONENTS IN TEACHER EDUCATION, OR PRACTICING WHAT WE PREACH

Date: June, 1969

Publication: R & D Report Series No. 15, accepted for publication by the Peabody Journal of Education

Abstract: Running throughout teacher education programs must be laboratory and clinical modules in which candidates actively encounter the demands of teaching. The situations must be specific and realistic and from which precise, descriptive feedback of teaching behavior may be derived and adjustments prescribed, practiced and refined. The Teaching Laboratory, as developed by The University of Texas Research and Development Center for Teacher Education, holds promise of offering many of these features. The Teaching Laboratory is described and discussed in its relation to ideal teacher education. Specific advantages of the Laboratory are outlined. A call is made for materials that can be used in Laboratory settings.

04.01

Author: Davis, O. L., Jr.

Title: TEACHING LABORATORY MANUAL

Date: 1968

Publication: R & D Center mimeograph

Abstract: This mimeographed paper is a manual designed to introduce undergraduate secondary education majors to the Teaching Laboratory in the College of Education at The University of Texas at Austin. It presents a series of teaching tasks to be completed by students in the Teaching Laboratory course. The tasks are general in nature; that is, they are relevant to all subjects taught in secondary schools. The manual consists of an introduction and descriptions and evaluation criteria for the following teaching tasks:

1. The Short Lesson
2. Clarifying instructional objectives
3. Preparing instructional materials - A-V laboratory
4. Interaction - questioning probing, silence, reinforcing
5. Presenting - introduction, A-V aids, summarizing
6. Refocusing
7. Team teaching and using small groups
8. Introducing your course

The manual was designed for student use in the Teaching Laboratory at The University of Texas, but may be of interest to educators who are planning similar teaching laboratories.

04.01

Authors: Davis, O. L., Jr.
Morse, Kevin R.
Rogers, Virginia M.
Tinsley, Drew C.

Title: STUDYING THE COGNITIVE EMPHASES OF TEACHERS' CLASSROOM QUESTIONS

Date: April, 1969

Publication: R & D Report Series No. 3, reprinted with permission from Educational Leadership

Abstract: Questions asked by teachers have been given little specific notice. The cognitive emphases of teachers' questions, relating as they do to operational cognitive objectives, now merit systematic attention. Past studies of teachers' questions are surveyed. The current literature is reviewed. 24 references, 9 pages.

04.03

Author: Fuller, Frances F.

Title: CONCERNS OF TEACHERS: A DEVELOPMENTAL CONCEPTUALIZATION

Date: March, 1969

Publication: American Educational Research Journal, Vol. VI, No. II, p. 207

Abstract: The concerns of teachers, i.e., the problems and tasks to which they address themselves, are posited to occur in three phases. Pre-teaching concerns are amorphous or not related to teaching. Early teaching concerns focus on self or self protection and may be overt or covert. Late concerns focus on pupils and outcomes of teaching. Eleven studies are reviewed which support this conceptualization. It is proposed that research on teaching consider concern phases and that teacher preparation experiences be selected and ordered according to systematically surveyed teacher concerns in teacher populations served.

03.02

Authors: Fuller, Frances F.
Bown, Oliver H.
Peck, Robert F.

Title: CREATING CLIMATES FOR GROWTH

Date: 1967

Publication: Hogg Foundation for Mental Health monograph,
35 pages softbound

Abstract: This monograph reports in layman's language some findings of the Mental Health in Teacher Education Project of The University of Texas and the UT Personality Research Center. Based on intensive case studies of individual prospective teachers and groups of young teachers, it describes ways in which teachers can come to know pupils, form hypotheses about children's behavior and test these hypotheses in the classroom. It describes how administrators can give support to teachers by verbalizing policies explicitly, understanding teachers' concerns and accepting diversity among teachers and pupils.

This booklet has been found to be of interest to prospective teachers, particularly to those beginning an undergraduate major in elementary or secondary education.

Distribution: More than 18,920 copies have been sold from two printings (1968-1969).

03.03

Authors: Fuller, Frances F.
Melcer, Donald J.
Albrecht, Dorothy

Title: MECHANICAL AND ELECTRONIC EQUIPMENT TO FACILITATE BEHAVIOR DESCRIPTION

Date: December, 1968

Publication: Classroom Interaction Newsletter, Vol. 4, No. 1, pp. 4-12; R & D Report Series No. 14

Abstract: Mechanical and electronic equipment developed by the Texas R & D Center for observing classroom interaction systems are described. The Coding Desk (Snake Coffin), Tally Guide and the Modified Flexowriter are described and illustrated. Construction and use are briefly outlined, references are given for complete plans and instructions. Three figures, three references.

03.02

Authors: Fuller, Frances F. (Editor)
Peck, Robert F.
Bown, Oliver H.
Menaker, Shirley L.
White, Meda M.

Title: EFFECTS OF PERSONALIZED FEEDBACK DURING TEACHER PREPARATION ON TEACHER PERSONALITY AND TEACHING BEHAVIOR

Date: 1969

Publication: R & D Report Series No. 4, final report of Project No. 5-0811, Grant No. OE 3-10-032, Personality, Teacher Education and Teaching Behavior

Abstract: The depersonalization of undergraduate education is an issue on which national attention has become focused. The purpose of this study, begun in 1962, was to test the effects of a personalized program of teacher education on the personality and behavior of prospective teachers in undergraduate preparation. The personalized treatments used were (1) individual counseling based on psychological assessment using instruments developed in a previous research effort, (2) film feedback (each teacher saw with a counselor a sound film of herself teaching), (3) situation feedback (teachers were either placed in student teaching situations tailored to their needs or given feedback about their student teaching situation.

Subjects were 96 elementary and 78 secondary undergraduate education majors, each divided into one control and three experimental groups. One of the experimental groups received counseling only, one received counseling plus film feedback and the third received counseling, film feedback and situation feedback.

Criteria were personality instruments (sentence completion, self-report instruments and projective instruments), and coded and rated sound films of teaching. These yielded 75 measures, each used in turn as the dependent variable in a two-factor (trials by treatments) analysis of variance designed. The largest number of changes observed occurred over the period of preparation in the group as a whole. In addition, when controls were compared with the pooled experimental group, feedback teachers changed more than controls in directions generally deemed desirable: increases in self-confidence, self-perceptions of persistence, self-reliance and ability to withstand stress; increase during actual teaching

in questioning pupils and decrease in lecturing to pupils. These and other changes observed were toward behaviors typical of inservice teachers.

The report describes the treatments used, including case material. The report may be of interest to researchers in counseling and teacher education and to persons planning teacher education programs.

01.00

Authors: Peck, Robert F.
Bown, Oliver H.

Title: THE RESEARCH AND DEVELOPMENT CENTER FOR TEACHER EDUCATION

Date: December, 1968

Publication: R & D Report Series No. 1

Abstract: This is an overview of the history, the objectives and the program of the R & D Center for Teacher Education. Prior research and experimental education programs dating from 1958 are described; the Center's evolution during its first three years is briefly sketched. The integrated plan of operation which emerged during 1968 is outlined in detail. The program has two major aims: (1) Basic research on the effects of varied kinds of teacher education on actual teaching behavior and the effect of teaching behavior on child learning. (2) The development of a teacher education system composed of a diversified array of many relatively small instructional modules which would ultimately permit flexible, individualized teacher development. Conceptual guidelines and the structure of modules are described, as are the anticipated products of the program.

Status: This report is available in some quantities; orders for up to 10 copies free of charge are welcome.

03.03

Author: Veldman, Donald J.

Title: PUPIL EVALUATION OF STUDENT TEACHERS AND THEIR SUPERVISORS

Date: 1969

Publication: Journal of Teacher Education (in press); preprinted as R & D Report Series No. 17

Abstract: This report is the first completed study from a larger project called Teacher Aides in a Secondary School, supported by the R & D Center for Teacher Education at The University of Texas. Pupils in 55 seventh-grade school classes completed the Pupil Observation Survey Report (POSR) twice -- once to describe their student teacher and once to describe the regular (cooperating-supervising) teacher. All teachers involved were female.

Analyses of variance of the six factor dimensions of the POSR indicated that the student teachers were seen as more friendly, cheerful, lively, interesting and directive, but as less poised, knowledgeable and firmly controlling than their supervisors. The difference in general evaluation of the two groups was not significant.

Correlations between the POSR scores of the student teachers and their supervisors were significant only for the factors called Non-Directive (r = .57) and Firm Control (r = .29). These results are consistent with the hypothesis that the regular teachers "set" the classroom atmosphere and activity structure before the student teacher arrives on the scene to handle the class by herself.

The findings are relevant to any research employing pupil evaluations of teacher behavior, and support the validity of the POSR as a specific tool for such measurement.

03.03

Author: Veldman, Donald J.

Title: RMM-8: ROTATION OF EMPIRICAL FACTORS TOWARD A THEORETICAL STRUCTURE

Date: Spring, 1969

Publication: Research Methodology Monograph No. 8

Abstract: A statistical procedure developed by Kaiser and programmed by the author for dealing with the "orthogonal Procrustes" problem in the field of factor analysis is described. Five examples are provided to illustrate applications of the method to educational/psychological data. Comparisons of two empirical structures are exemplified, as well as the reorientation of an empirical structure toward an artificial structure representing a particular hypothesis. The purpose of the paper is tutorial, but the substantive results of the examples may also be of interest to behavioral scientists.

03.03

Authors: Veldman, Donald J.
Menaker, Shirley L.

Title: THE DIRECTED IMAGINATION METHOD FOR PROJECTIVE ASSESSMENT OF TEACHER CANDIDATES

Date: 1969

Publication: Journal of Educational Psychology, Vol. 60, No. 3, pp. 178-187

Abstract: This paper summarizes the development of a scoring system for this projective personality assessment technique. Validity evidence was obtained from data provided through the Personality and Teaching Behavior project at The University of Texas. This technique has particular value for personalization of teacher education programs.

The Directed Imagination technique consists of a single sentence of instruction: "Tell four fictional stories about teachers and their experiences." Subjects are provided with four blank sheets of paper, and are allowed four minutes to write each story. Based on a sample of 250 protocols provided by 125 female students enrolled in the College of Education, an extensive scoring manual was developed to define measures of 15 variables concerning structural, psychological, and educational aspects of the narratives. Internal consistency reliabilities ranged from .53 to .82. Four construct validity studies are also reported.

The scales successfully discriminated elementary from secondary majors, students involved in an experimental teacher education program from those in a control group, students who evidenced a strong intent to continue in teaching after graduation from those who had little intention of continuing, and students who had sought extensive personal counseling during their years in the program from those who had not sought such help.

03.03

Authors: Veldman, Donald J.
Menaker, Shirley L.
Peck, Robert F.

Title: COMPUTER SCORING OF SENTENCE COMPLETION DATA

Date: Spring, 1968

Publication: Research Methodology Monograph No. 3

Abstract: This article summarizes developmental work on computer-based scoring systems carried out by the Computer Analysis of Personality project. This technique of personality assessment is especially valuable in situations such as teacher education programs where the same data may be used both for screening and for individual clinical analysis.

The development of techniques for computer-based personality assessment from sentence completions is outlined. The One-Word Sentence Completion (OWSC) instrument was designed to elicit data suitable for machine processing, while retaining most of the advantages of a free-response format. Two operative scoring systems are described. The first employs a "dictionary" of 4366 weighted response words to yield 25 scores from a 90-item OWSC form. The second system utilizes a complex word-root data reduction procedure and a bank of 892 generic roots to produce scores for 40 variables. Initial reliability data and normative sex differences are reported, and future development of the technique is discussed.

03.03

Authors: Veldman, Donald J.
Menaker, Shirley L.
Williams, Don L.

Title: MANUAL FOR SCORING THE TEST OF DIRECTED IMAGINATION

Date: August, 1967

Publication: Research Methodology Monograph No. 4

Abstract: The Directed Imagination technique is the ultimate extension of the projective hypothesis, in that no physical stimuli are used. The subject is simply instructed to write "four fictional stories about teachers and their experiences." Subjects are given four minutes to complete each story. This manual describes in detail and with extensive examples the procedure for scoring each story on 15 dimensions relevant to teacher education research. The 15 dimensions are: Amount of Content, Degree of Focus on Individuals, Realism, Coherence, Imagination, Optimism, Identification with Teaching Role, Perception of Own Ability, Crisis Level, Empathy with Children, Maturity of Educational Content, Coping Activity, Adequacy of Action, Problem Resolution, and General Adjustment.

The monograph also includes results of an inter-judge reliability study based on 78 protocols. Estimates of the reliability of pooled ratings of two judges ranged from .52 to .86 for the 15 scales.

03.03

Authors: Veldman, Donald J.
Peck, Robert F.

Title: THE PUPIL OBSERVATION SURVEY: TEACHER BEHAVIOR FROM THE STUDENTS' VIEWPOINT

Date: October, 1967

Publication: Research Methodology Monograph No. 2

Abstract: This monograph summarizes the development of the Pupil Observation Survey Report (POSR), an instrument designed to be completed by pupils in junior and senior high school classes in order to describe their teachers. The instrument consists of 38 statements followed by four-choice agreement scales. Data from a single class are reduced to item means and then to scores on six factor dimensions isolated by analysis of over 600 student teachers studied in the Mental Health in Teacher Education project at The University of Texas.

The monograph reviews the various published research studies on the development and applications of the instrument, and includes a FORTRAN computer program for scoring the raw protocols. An example of an IBM 1230 optical-scanned answer sheet for the instrument is also included.

Comparisons of factor structures obtained from analyses of data describing large samples of male and female teachers are reported, as well as an extensive series of regression analyses concerning various potential influences on pupil evaluations of teachers.

This instrument is currently in use in a number of experimental studies being carried out by the R & D Center for Teacher Education.

04.02

Authors: White, Marjorie A.
Raun, Chester E.
Butts, David P.

Title: A STUDY OF CONTRASTING PATTERNS IN INSERVICE EDUCATION

Date: 1968

Publication: R & D Report Series No. 7, originally published as an R & D Center mimeograph as Science Inservice Project Research Report No. 3

ERIC No.: Ed 021 807

Abstract: New curricula have been developed by cooperating groups that are not part of the local system. These curricula reflect a teaching philosophy that is different from that maintained by many teachers. A teacher education program has been developed to meet this need. The question of this study is: what conditions affect the impact of the teacher education program when its impact is described in terms of competency in science and attitude toward both the curriculum innovation and the teacher education program?

Variables contributing to anticipated outcome included organization of the program (i.e., summer inservice workshop, released-time inservice training, or college credit program, the location of the program), previous teaching experience; previous science courses, and grade level taught.

In the study, the curriculum, Science - A Process Approach, was the same for all participants. The sample was composed of three groups: 33 teachers in the college credit plan; 33 teachers in a one-week pre-school workshop; and 74 teachers in a released-time inservice plan.

Regression analysis showed that organization and location of the teacher education program are relevant conditions. For an improvement in both competence in science and teacher attitude it appears that the released-time format of teacher training is more effective. Previous science courses appear to be a relevant condition for increased competence in science and, to a limited extent, for a more positive attitude toward science. Previous teaching experience and grade level taught do not appear to be related to competence in science but are related to a teacher's attitude.

02.03

Author: Wilson, Dave

Title: SANDRA SMITH: AN INDIVIDUAL STEPS OUT

Date: April, 1969

Publication: R & D Report Series No. 13, reprint of article appearing in The Texas Parent-Teacher, Vol. 47, No. 4, pp. 5-8.

Abstract: This feature story informally recounts the passage of a University of Texas coed through an experimental program of personalized education in the UT at Austin College of Education. Sandra Smith is a typical female subject for one of the research projects of the Research and Development Center for Teacher Education. She completes written psychological assessment tests, undergoes psychological feedback counseling, is filmed while teaching and views her films in company with the psychologist and her supervisor. She participates in a special junior-year program as a teaching aidein an Austin junior high school. How Sandra changed over the two-year period is discussed by both herself and her counselor.

APPENDIX E. SELECTED PRODUCTS REVIEW

The Bown Self-Report Inventory

An early product of R & D-related research was the assessment instrument known as the Bown Self-Report Inventory (SRI). This instrument, which appears in several forms for different populations, has also been translated into Spanish and French. An abbreviated list of institutions that have used the SRI would include the following:

Educational Psychology Department
School of Education
Indiana University

Douglass Public Schools
Douglass, Wyoming

School of Social Work
University of Oklahoma

Department of Psychology
Aurora College
Aurora, Illinois

Imperial County Welfare Department
El Centro, California

Student Affairs Office
Mount Royal Junior College
Calgary, Alberta
Canada

Department of Education
Southwest Texas State University
San Marcos, Texas

University of Oregon Medical School
Portland, Oregon

Counselor's Office
Casper College
Casper, Wyoming

Guidance and Testing Office
Ferrum Junior College
Ferrum, Virginia

Department of Psychology
Metropolitan Junior College
Kansas City, Missouri

Counselor's Office
Monroe County Community College
Monroe, Mighigan

Elementary Education Department
University of Southern Mississippi

Guidance Services Office
University of Corpus Christi
Corpus Christi, Texas

Department of Psychology
Asheville-Biltmore College
Asheville, North Carolina

Southeastern Louisiana College
Hammond, Louisiana

Department of Home Economics
San Jose State College
San Jose, California

Madison County Schools
Madison, Mississippi

The Salvation Army
San Antonio, Texas

Department of Agricultural Communications
Loughty Agricultural College
Cookston, Co. Tyrone
Northern Ireland

Counselor's Office
San Antonio College
San Antonio, Texas

Linden Hill
Division of the Jewish Board of Guardians
Hawthorne, New York

Science-Mathematics Teaching Modules

Modules developed by the Science and Mathematics Teaching groups are receiving wide-spread pilot use through the Science-Mathematics Inservice Workshops conducted by the Science Education Center. These workshops are discussed in section 04.0201.

Team Teaching Modules

The Team Teaching Modules developed by Dr. L. Jean York (04.0203) are to be pilot tested this Fall in the following school systems:

Viking Hills School District
Viking Hills, Texas

Fannin Elementary School
Corsicana Public School District
Corsicana, Texas

Chula Vista Public Schools
Chula Vista, California

Social Studies Videotapes

Several videotapes have been prepared by the Social Studies Module Building group (04.0204) for use in training teachers of migrant children of kindergarten age. These tapes have been used by numerous institutions and school districts, including the following:

Moorhead State College
Moorhead, Minnesota

Houston Independent School District
Houston, Texas

School of Education
Texas Technological College
Lubbock, Texas

Department of Education
Texas A&M University
College Station, Texas

Regional Migrant Education Project
Merced, California

Austin Independent School District
Austin, Texas

APPENDIX F. DISTRIBUTION OF THIS REPORT

The 1969 Annual Report of the Research and Development Center for Teacher Education has been initially disseminated in the following manner:

USOE Washington Office	15
Policy and Planning Board	13
R & D Center Directors	9
Regional Laboratory Directors	15
Internal distribution	30
Rep. J.J. Pickle	1
Senator Ralph Yarborough	1
Senator John G. Tower	1
Total	85
Total printed	150
Remainder	65

Following the initial distribution of this report, some 65 copies will remain available and may be obtained from the R & D Center on request.